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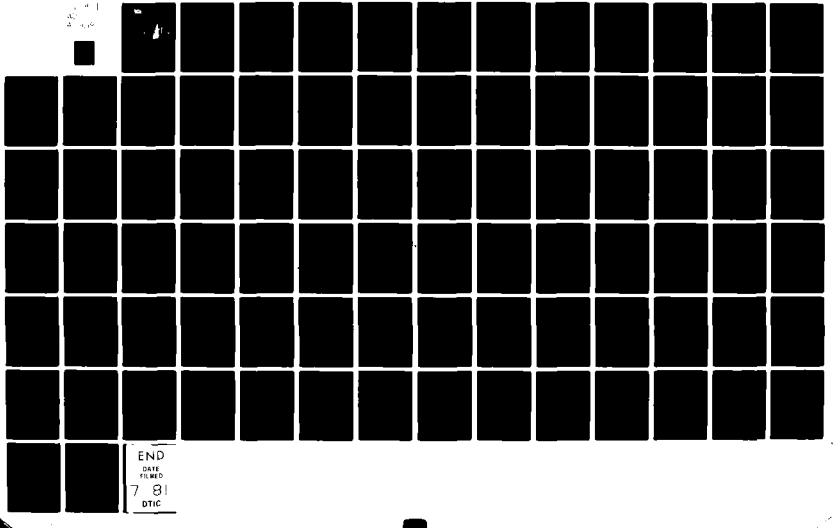

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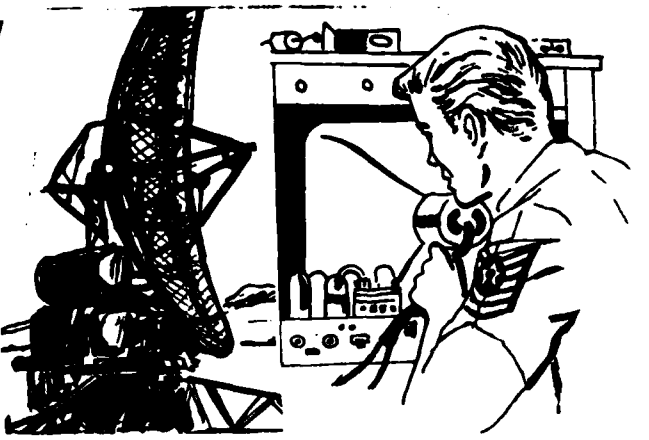
OCCUPATIONAL SURVEY REPORT



AIR TRAFFIC CONTROL RADAR, AIRCRAFT CONTROL AND WARNING RADAR, AND AUTOMATIC TRACKING RADAR SPECIALTIES

AFSs 303X1, 303X2, AND 303X3

VOL. I OF IV

AFPT 90-303-400

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OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78148

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PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Air Traffic Control Radar (AFS 303X1), Aircraft Control and Warning Radar (AFS 303X2), and Automatic Tracking Radar (AFS 303X3) career ladders. The report was prepared for the Classifications Branch of the Air Force Manpower and Personnel Center (AFMPC) located at Randolph AFB TX in response to their request for occupational data on the tasks and jobs performed by 303X1, 303X2, and 303X3 personnel, with primary emphasis on the possible merger of the three career ladders. Several sources in the field had indicated that the jobs performed by the personnel in the three career ladders are fairly similiar, and a reclassification of the three career ladders could be warranted. Authority for conducting surveys is contained in AFR 35-2. Computer outputs from which this report was produced are available for use by operating and training officials.

Computer programs for analyzing the occupational data were designed by Dr. Raymond E. Christal, Manpower and Personnel Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Computer Programming Branch, Technical Services Division, AFHRL.

The Air Force occupational survey program has been in existence since 1956 when initial research was undertaken by AFHRL (Air Force Systems Command) to develop a methodology for gathering and analyzing occupational information. In 1967, an operational occupational survey program was established within the Air Training Command and surveys were produced annually for 12 enlisted specialties. In 1972, the program was expanded to conduct occupational surveys covering 51 career fields annually. In late 1975, the program was again expanded to include the survey of officer utilization fields, to permit special management applications projects, and to support interservice or joint service occupational analysis.

The survey instrument used in the present project was developed by Chief Master Sergeant Robert Wing, Inventory Development Specialist. Captain Michael Hill, First Lieutenant Gordy Curphy, and Second Lieutenant John Tierney analyzed the survey data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Randolph AFB, Texas 78148.

Copies of this report are available to air staff sections, major commands, and other interested training and management personnel upon request to the USAF Occupational Measurement Center, attention to the Chief, Occupational Survey Branch (OMY), Randolph AFB, Texas 78148.

This report has been reviewed and is approved.

PAUL T. RINGENBACH, Col, USAF
Commander
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SUMMARY OF RESULTS

1. Survey Coverage: Inventory booklets were administered to Air Traffic Control (AFS 303X1), Aircraft Control and Warning (AFS 303X2), and Automatic Tracking Radar (AFS 303X3) personnel worldwide. Survey results are based on the responses from 2,223 AFS 303XX incumbents (64 percent of assigned). Approximately equal percentages of 303X1, 303X2, and 303X3 personnel make up the total combined sample.

2. Career Ladder Structure: A total of nineteen different major job groups were identified, and DAFSC 303X1, 303X2, and 303X3 personnel were found to be performing distinctly different technical radar maintenance or operations jobs. Only with jobs involving supervision, administration or training were substantial percentages of personnel from all three career ladders found. Based on these findings, a merger of these career ladders at the lower skill levels does not appear warranted.

3. DAFSC Analysis: A comparison of the technical tasks performed across the three specialties reveals general and preventive maintenance tasks are performed by substantial percentages of personnel from all three specialties. However, specialty specific tasks, such as AC and W radar maintenance tasks, were found to be performed by substantial percentages of 303X2 personnel, with very low percentages of 303X1 or 303X3 personnel performing these same tasks.

4. Summary of Background Information: A majority of the personnel from all three specialties entered their respective career ladders after completing resident classroom training. DAFSC 303X3 personnel were identified as spending more time per week performing radar operations functions. A high percentage of DAFSC 303X2 personnel were identified as spending no time performing maintenance functions. Finally, the day shift was the most common type of work shift performed by the personnel in all three career ladders.

5. Training Analysis: Due to the disparity of radar operations and maintenance jobs performed by the personnel in the three ladders, the possibility of providing comprehensive basic resident training, to the same degree of proficiency as that which is currently provided, appears slim for a combined AFSC. An analysis of the relative difficulty of tasks reveals a high level of agreement among task difficulty raters from all three specialties. Finally, very few types of radars or radar equipment were maintained by substantial percentages of first enlistment (1-48 months TAFMS) personnel from all three career ladders.

6. Implications: Based on the analysis of the tasks and jobs performed by 303X1, 303X2, and 303X3 personnel, a merger of these three specialties does not appear feasible at this time. In addition to task differences, job satisfaction, electronic principles, and equipment differences were noted for the personnel in the three specialties. All of these factors would probably have a negative impact on the overall 303XX career field if the three ladders were merged.

OCCUPATIONAL SURVEY REPORT
AIR TRAFFIC CONTROL RADAR, AIRCRAFT CONTROL AND WARNING RADAR, AND AUTOMATIC TRACKING RADAR SPECIALTIES (AFSs 303X1, 303X2, AND 303X3)

INTRODUCTION

This is a report of an occupational survey of the Air Traffic Control Radar, Aircraft Control and Warning Radar, and Automatic Tracking Radar specialties (AFSs 303X1, 303X2, and 303X3) completed by the Occupational Survey Branch, USAF Occupational Measurement Center, in March 1981. The survey was initiated at the request of the Air Force Manpower and Personnel Center Classification Branch (AFMPC/MPCRPQ) to determine the feasibility of combining the three specialties into a common specialty. Results of the assessment of the feasibility of combining the three specialties are presented specifically in this report. Individual reports for the 303X1 (Air Traffic Control Radar), 303X2 (Aircraft Control and Warning Radar), and 303X3 (Automatic Tracking Radar) career ladders are also available (AFPT 90-303-400 Volumes II, III, and IV) which present more detailed analyses for each respective specialty.

Background

Members of all three specialties perform maintenance on radar systems and associated ancillary equipment. Personnel in the Air Traffic Control Radar career ladder are primarily a AFCC resource and are responsible for installing, maintaining, and repairing air traffic control radar, related operator training devices, associated communications subsystems, radar beacon systems, remoting systems, video mappers, and computerized processing devices. Aircraft Control and Warning Radar personnel are primarily TAC or USAFE resources and specialize in installing, maintaining, and repairing ground aircraft control and warning radar, related operator training devices, and associated equipment, including test equipment. Finally, Automated Tracking Radar personnel are primarily a SAC or TAC resource and specialize in the installation, maintenance, and operation of automated tracking radar systems, acquisition systems, related electronic warfare equipment, and associated identification equipment. These 303X3 personnel are directly involved with both Radar Bomb Scoring (RBS) and Ground Directed Bombing (GDB) functions.

In order for the personnel in all three career ladders to properly perform their respective jobs, formal training for the 303X1, 303X2, and 303X3 career ladders is conducted at Keesler AFB MS. The 3ABR30331 Air Traffic Control Radar Repairman course is 147 days in length with approximately 303 incumbents per year successfully completing the course. The 3ABR30332 Aircraft Control and Warning Radar Repairman course is 98 days long, and approximately 105 individuals per year successfully complete the course. Finally, the 3ABR30333 Automatic Tracking Radar Specialist course is 109 days in length, and approximately 349 incumbents per year successfully complete the course. Upon graduation from any of the above three courses, personnel are awarded the 3-skill level in their respective AFSCs and are assigned to various units worldwide.

Objectives

This report will examine the Air Traffic Control Radar, Aircraft Control and Warning Radar, and Automatic Tracking Radar specialties on the basis of tasks performed and the time spent on these tasks by survey respondents. Using occupational survey data along with other sources, Air Force managers can determine the most efficient way to classify and manage these manpower resources. Topics discussed in this report include: (1) development and administration of the survey instrument; (2) the job structure relationship of the career field in regards to AFSC and experience level; (3) comparisons between specialties; (4) the relative difficulty of survey tasks; and (5) job satisfaction and other related data. Specific topics discussed in the supplemental reports for each specialty include: (1) the job structure of the individual specialties and their relationship to respective skill and experience level groupings; (2) comparisons of specialty responsibilities to AFR 39-1 Specialty Descriptions; (3) CONUS versus overseas distinctions; (4) Major Command comparisons; and (5) task factors in relation to the Specialty Training Standards (STS) and Plans of Instruction; and (6) job satisfaction and related background information.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-303-400. As a starting point, the tasks listed in the 1977 303X1, the 1978 303X2, and the 1977 303X3 job inventories were reviewed for currency by the Inventory Development Specialist and two Instructors from each specialty at Keesler AFB MS. They then reviewed all pertinent career ladder publications and directives for additional radar related tasks. This tentative task list was then reviewed for completeness and accuracy by 30 303X1, 303X2, and 303X3 personnel at Nellis AFB NV, Tinker AFB OK, Peterson AFB CO, and LaJunta AFS CO. The resulting task list was reviewed again by Keesler Technical Training Instructors. This final review of the task list was accomplished by getting 303X1, 303X2, and 303X3 Training Instructors together in a face-to-face encounter in order to insure the tasks were representative of the jobs performed by 303X1, 303X2, and 303X3 personnel. This encounter helped to insure that the skills and knowledges needed to perform a task were the same, regardless of the equipment associated with the task. For example, wiring diagrams of radar equipment using klystrons were presented during the encounter, and the Training Instructors debated on whether the skills and knowledges need to isolate malfunctions on one type of equipment was essentially the same as for the other types of equipment. If the skills and knowledges were similar, then only one task was written, such as "isolate diplexer malfunctions". If the skills and knowledges differed to some degree, then a number of more equipment specific tasks were written, such as "isolate klystron malfunctions in search radars" Another example of this type of commonality discussion centered around components of various systems. In this study there was a consensus that most components removed or replaced required the same skill no matter what system they were located in. For example, the task "remove or replace duplexers" indicates that the skill is the same no matter what equipment it is located in.

This process resulted in a final job inventory of 1,324 tasks grouped under 20 duty headings. In addition, a background section which included information about each respondent, such as grade, Total Active Federal Military Service (TAFMS), duty title, job interest, and the type of radar system maintained or operated.

Job Inventory Administration

During the period May through September 1980, Consolidated Base Personnel Offices in operational units worldwide administered the inventory to all job incumbents holding a DAFSC of 303X1, 303X2, 303X3, or 30399. These job incumbents were identified using AFMPC personnel data tapes available through the Air Force Human Resources Laboratory (AFHRL).

Each individual who filled out an inventory first completed an identification and biographical information section and then checked each task performed in their current job. After checking all tasks performed, each member then rated each of these tasks on a nine-point scale showing relative time spent on the task as compared to all other tasks checked. The ratings ranged from one (very small amount of time spent) through five (about average time spent) to nine (very large amount time spent).

To determine relative time spent for each tasks checked by a respondent, all of an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task is then divided by the total task ratings and multiplied by 100. This procedure provides a basis for comparing tasks in terms of both percent members performing and relative percent time spent.

Task Factor Administration

In addition to completing the job inventory, selected senior 303X1, 303X2, and 303X3 personnel were also asked to complete a second booklet for task difficulty. The task difficulty rating booklets are processed separately from the job inventories. This information is used in a number of different analyses discussed in more detail within the report.

Task Difficulty. Each senior NCO completing a task difficulty booklet was asked to rate all of the tasks on a nine-point scale from extremely low to extremely high as to the relative difficulty of that task. Difficulty is defined as the length of time it requires an average member to learn to do that task. Task difficulty data was independently solicited from experienced 7- or 9-skill level personnel stationed worldwide in each specialty. The interrater reliability (as assessed through components of variance of standard group means) for the 135 DAFSC 303X1, 303X2, and 303X3 raters who returned booklets was .98 which suggests very high agreement. Ratings were then adjusted so that tasks of average difficulty have ratings of 5.0. The resulting data is a rank ordering of tasks indicating a degree of difficulty for each task in the inventory.

Job Difficulty Index. After computing the task difficulty index for each item, it is then possible to compute a Job Difficulty Index (JDI) for the job groups identified in the survey analysis. This index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. An equation using the number of tasks performed and the average difficulty per unit time spent as variables are the basis for the JDI. This index ranges from one for very easy jobs to 25 for very difficult jobs. The data are adjusted so that the average job difficulty index is 13.00. Thus, the more time a group spends performing difficult tasks, and the more tasks they perform the higher will be their job difficulty index. The JDI ratings for the 303X1, 303X2, and 303X3 career ladders can be found in the CAREER LADDER STRUCTURE section of this report.

When used in conjunction with other factors, such as percent members performing, the task difficulty ratings can provide insight into the training requirements of the specialty. This may help validate the lengthening or shortening of specific units of instruction to refine various training programs.

Survey Sample

Personnel were selected to participate in this survey so as to insure an accurate representation across all career ladders, MAJCOMs, and paygrade groups. In this study, all incumbents with a 303X1, 303X2, 303X3, or 30399 DAFSC who were available for sampling were solicited for their responses. Table 1 reflects both the percentage of personnel in all three career ladders in the combined sample as well as the major command distribution of personnel assigned to each career ladder as of the Fall of 1980. Table 2 reflects the percentage distribution by paygrade for each ladder. Table 3 reflects the distribution of the survey sample in terms of TAFMS groups. Overall, a representative sample was obtained, with 2,223 of the 3,491 respondents (64 percent) assigned to these three career ladders sampled.

Data Processing and Analysis

Once job inventories are returned from the field, they are prepared so that task responses and background information can be optically scanned. Other biographical information (such as name, base, autovon extension) is keypunched onto disks and entered directly into the computer. Once both sets of data are in the computer, they are merged to form a complete case record for each respondent. Computer generated programs using Comprehensive Occupational Data Analysis Programs (CODAP) techniques were then applied to the data.

CODAP produces job descriptions for respondents based on their responses to specific inventory tasks. Computer generated job descriptions are available for DAFSC groups, TAFMS groups, and MAJCOM groups, and include such information as percent members performing each task, the average percent time spent performing each task, the percent members utilizing various pieces of equipment, and the cumulative average percent time spent by all members for each task in the inventory.

TABLE 1

COMMAND DISTRIBUTION OF SURVEY SAMPLE

MAJOR COMMAND	AFS 303X1		AFS 303X2		AFS 303X3		DAFSC 30399	
	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
AFCC	92	88	13	12	1	2	28	22
ATC	5	6	4	5	3	3	3	*
SAC	*	*	*	*	50	55	10	18
TAC	*	*	58	65	28	27	35	48
USAFE	*	*	17	14	2	1	6	5
PACAF	*	*	3	2	4	4	3	5
AFSC	*	*	2	1	3	3	6	1
AAC	*	*	*	*	1	4	3	*
OTHER	3	6	3	1	8	1	6	1
TOTAL	100	100	100	100	100	100	100	100

TOTAL 303XX ASSIGNED - 3491
TOTAL 303XX SAMPLED - 2223
PERCENT OF 303XX SAMPLED - 64%

TOTAL 303X1 ASSIGNED - 1219
TOTAL 303X1 SAMPLED - 750
PERCENT OF 303X1 SAMPLED - 62%
PERCENT OF TOTAL 303XX SAMPLE - 33%

TOTAL 303X2 ASSIGNED - 1023
TOTAL 303X2 SAMPLED - 724
PERCENT OF 303X2 SAMPLED - 71%
PERCENT OF TOTAL 303XX SAMPLE - 33%

TOTAL 303X3 ASSIGNED - 1161
TOTAL 303X3 SAMPLED - 661
PERCENT OF 303X3 SAMPLED - 57%
PERCENT OF TOTAL 303XX SAMPLE - 30%

TOTAL 30399 ASSIGNED - 88
TOTAL 30399 SAMPLED - 88
PERCENT OF 30399 SAMPLED - 100%
PERCENT OF TOTAL 303XX SAMPLE - 4%

* DENOTES LESS THAN ONE PERCENT

TABLE 2

PAYGRADE DISTRIBUTION OF SURVEY SAMPLE

PAYGRADE	AFS 303X1		AFS 303X2		AFS 303X3		DAFSC 30399	
	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
AIRMAN	25	23	14	10	31	28	0	0
E-4	24	28	16	29	31	31	0	0
E-5	30	29	36	33	22	23	0	0
E-6	13	13	20	18	10	11	0	0
E-7	8	7	14	10	6	7	0	0
E-8	*	*	*	*	*	*	100	100
TOTAL	100	100	100	100	100	100	100	100

* DENOTES LESS THAN ONE PERCENT

TABLE 3

TAFMS DISTRIBUTION OF SURVEY SAMPLE

AFS	MONTHS TIME IN SERVICE 1-48	49-96	97+	TOTAL
303X1				
NUMBER IN SAMPLE	253	218	279	750
PERCENT OF 303X1 SAMPLE	34%	29%	37%	100%
303X2				
NUMBER IN SAMPLE	211	157	356	724
PERCENT OF 303X2 SAMPLE	29%	22%	49%	100%
303X3				
NUMBER IN SAMPLE	324	143	194	661
PERCENT OF 303X3 SAMPLE	49%	22%	29%	100%
30399				
NUMBER IN SAMPLE	NONE	NONE	88	88
PERCENT OF 30399 SAMPLE	NONE	NONE	100%	100%

CAREER LADDER STRUCTURE

The structure of jobs within the Radar Maintenance career ladders (AFSCs 303X1, 303X2, and 303X3) were examined on the basis of similarity of tasks performed and the percent of time spent ratings provided by job incumbents, independent of specialty or other background factors.

For the purpose of organizing individual jobs into similar units of work, an automated job clustering program is used. This hierarchical grouping program is a basic part of the Comprehensive Occupational Data Analysis Program (CODAP) system for job analysis. Each individual job description in the sample is compared to every other job description in terms of tasks performed and the relative amount of time spent on each task in the job inventory. The automated system is designed to locate the two job descriptions with the most similar patterns of tasks and percent time ratings and combine them to form a composite job description. In successive stages, members are added to initial groups or new groups are formed based on the similarity of tasks and percent of time ratings in each individual job description. This procedure is continued until all individuals and groups are combined to form a single composite representing the total sample. The resulting analysis of the variety of groups of jobs serves to identify: (1) the number and characteristics of the different jobs which exist within the career ladders: (2) the tasks which tend to be performed together by the same respondents; and (3) the breadth or narrowness of the jobs which exist within the Radar Maintenance career ladders.

The basic identifying group used in the hierarchical job structuring process is the Job Type. A job type is a group of individuals who perform many of the same tasks and spend similar amounts of time performing them (However, due to the large number and diversity of job types identified in each of the three career ladders, job types will not be discussed in this report. Both a narrative and graphic description of the job types identified for each career ladder is available in the respective career ladder Occupational Survey Reports, AFPT 90-303-400 Volumes II, III, and IV.) When there is a substantial degree of similarity between different job types, they are grouped together and labeled as Clusters. In many career fields, there are specialized job types that are too dissimilar to be grouped into any cluster. These unique groups are labeled Independent Job Types.

The jobs performed by the Radar Maintenance career ladders incumbents are illustrated in Figure 1. Based on the similarity of tasks performed and the amount of time spent performing each task, seven clusters and 12 independent job types were identified. These clusters and independent job types are on the following pages:

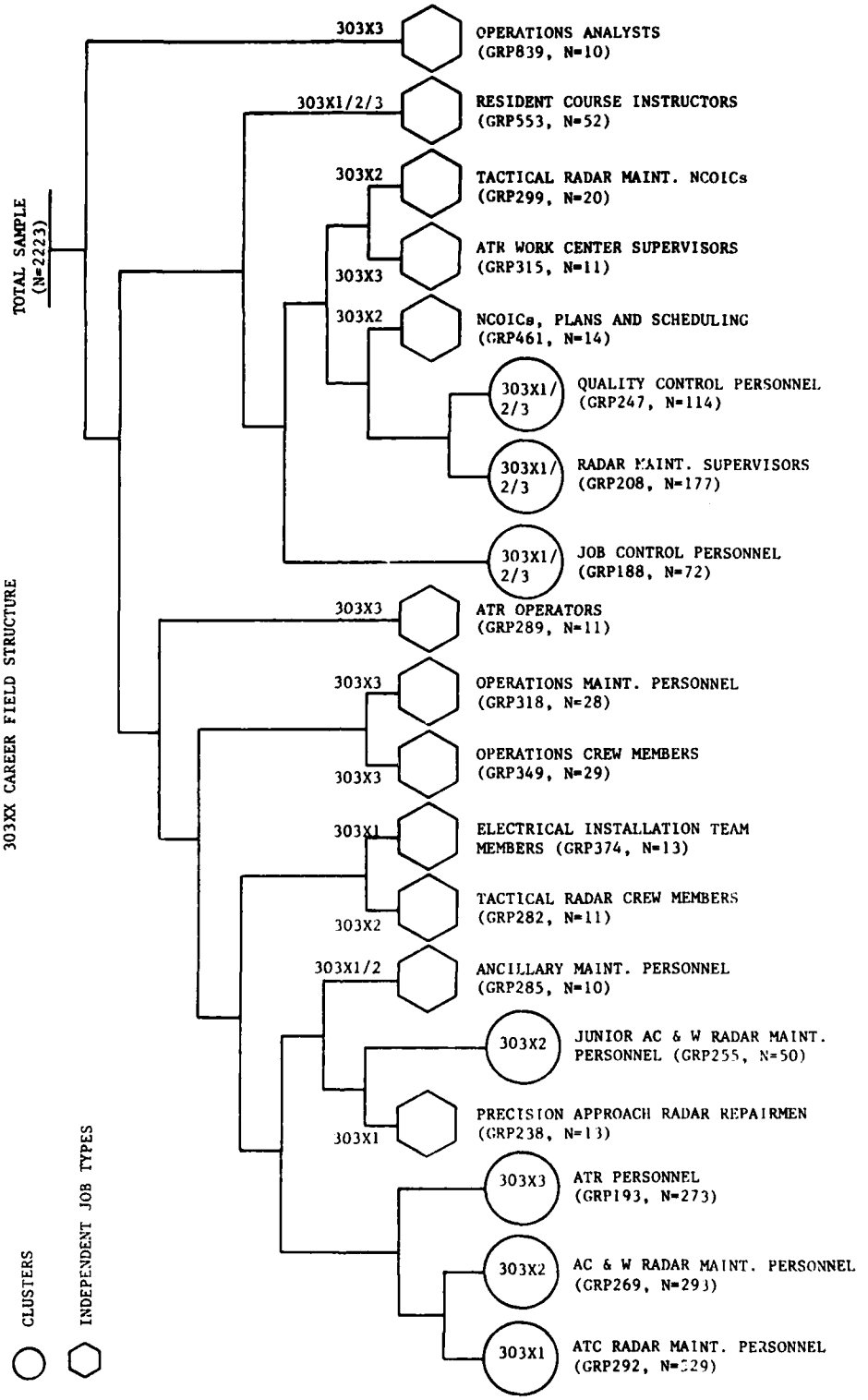

FIGURE 1

303XX CAREER FIELD STRUCTURE

I. AIR TRAFFIC CONTROL (ATC) RADAR MAINTENANCE PERSONNEL (GRP292, N=529)
(Primarily DAFSC 303X1, includes ten job types)

II. AIRCRAFT CONTROL AND WARNING (AC & W) RADAR MAINTENANCE PERSONNEL
(GRP269, N=293) (Primarily DAFSC 303X2, includes six job types)

III. AUTOMATIC TRACKING RADAR (ATR) PERSONNEL (GRP193, N=273)
(Primarily DAFSC 303X3, includes eleven job types)

IV. PRECISION APPROACH RADAR REPAIRMEN (GRP238, N=13)
(Primarily DAFSC 303X1)

V. JUNIOR AC & W RADAR MAINTENANCE PERSONNEL (GRP255, N=50)
(Primarily DAFSC 303X2, includes three job types)

VI. ANCILLARY MAINTENANCE PERSONNEL (GRP285, N=10)
(Both DAFSCs 303X1 and 303X2)

VII. TACTICAL RADAR CREW MEMBERS (GRP282, N=11)
(Primarily DAFSC 303X2)

VIII. ELECTRICAL INSTALLATION TEAM MEMBERS (GRP374, N=13)
(Primarily DAFSC 303X1)

IX. OPERATIONS CREW MEMBERS (GRP349, N=29)
(Primarily DAFSC 303X3)

X. OPERATIONS MAINTENANCE PERSONNEL (GRP318, N=28)
(Primarily DAFSC 303X3)

XI. ATR OPERATORS (GRP289, N=11)
(Primarily DAFSC 303X3)

XII. JOB CONTROL PERSONNEL (GRP188, N=72)
(All three DAFSCs, includes three job types)

XIII. RADAR MAINTENANCE SUPERVISORS (GRP208, N=177)
(All three DAFSCs, includes five job types)

XIV. QUALITY CONTROL PERSONNEL (GRP247, N=114)
(All three DAFSCs, includes three job types)

XV. NCOICs, PLANS AND SCHEDULING (GRP461, N=14)
(Primarily DAFSC 303X2)

XVI. ATR WORK CENTER SUPERVISORS (GRP315, N=11)
(Primarily DAFSC 303X3)

XVII. TACTICAL RADAR MAINTENANCE NCOICs (GRP299, N=20)
(Primarily DAFSC 303X2)

XVIII. RESIDENT COURSE INSTRUCTORS (GRP553, N=52)
(All three DAFSCs)

XIX. OPERATIONS ANALYSTS (GRP839, N=10)
(Primarily DAFSC 303X3)

The respondents forming these independent job types and clusters account for 78 percent of the survey sample. The remaining 22 percent did not group with any of the job types or clusters described above. Some of the titles held by the remaining 22 percent were: ATC Radar Repairmen, AN/TPS-43 Crew Chief, Radar Repairman, Auto Track Radar Repairman, AC and W Radar Repairman, Trainer and Scope Repairman, Board Operator, Electronic Systems NCO, Job Control Technician, and Special Projects NCO. These personnel did not group with any cluster or job type because of either the unique job type performed or in the manner in which they perceived their job.

Overview

Generally, the three career ladders perform different jobs, with relatively few jobs being comprised of personnel from more than one career ladder. This is especially true with the technical jobs being performed, since only one job (Ancillary Maintenance Personnel) is performed by roughly equal percentages of personnel from two of the career ladders. However, the nontechnical jobs identified (Job Control Personnel, Radar Maintenance Supervisors, Quality Control Personnel, and Resident Course Instructors) are comprised of personnel from all three career ladders. There are major differences in the types of technical jobs performed by radar maintenance incumbents. These differences appear to be great enough that a merger of the three ladders does not appear feasible.

Brief descriptions of each cluster and independent job type are presented below. In addition, there are nine tables at the end of this section that provide additional information about the clusters and independent job types. Tables 4-6 provide the relative percent time spent on each duty by the personnel in each of the major job groups identified. For example Automatic Tracking Radar Personnel spend 21 percent of their job time performing operator functions, while Job Control Personnel spend 47 percent of their time performing administrative and supply functions. Tables 7-9 provide select background information for each major job group, such as the average number of tasks performed, DAFSC, and MAJCOM. For example, 73 percent of the Tactical Radar Crew Members hold DAFSC 30352, 73 percent are a TAC resource, and these incumbents perform an average of 58 tasks. Tables 10-12 provide job satisfaction and related information for the major job groups identified. These data suggest that Operations Crew Members are fairly dissatisfied with their job, with only 41 percent perceiving their job interesting and 45 percent planning to reenlist.

Also included at the end this report is an appendix concerning the three career ladders. Appendix A lists the common tasks performed by members for each of the clusters and independent job types identified in this section. These task tables can provide additional insight into the type of job performed by the personnel in the major job groups.

Job Groups

I. AIR TRAFFIC CONTROL (ATC) RADAR MAINTENANCE PERSONNEL (GRP292). This cluster of 529 respondents is the largest in the sample, with the majority holding DAFSC 303X1. These incumbents are primarily an AFCC resource, and are responsible for maintaining the precision approach, ground controlled approach, airport surveillance, and associated radars (such as the AN/FPN-47, AN/MPN-14H, or AN/FPN-16/61) for the Air Force. These incumbents spend a majority of their job time performing maintenance on receiver, transmitter, display, and associated equipment. Typical tasks performed by these incumbents include:

perform PMIs on transmitter equipment
perform PMIs on receiver equipment
adjust video amplifiers
align indicator sweep generators
align precision map generators
align analog moving target indicator (MTI) receivers

Overall, these incumbents perform the highest average number of tasks (317) and have the highest Job Difficulty Index (19.1; see INTRODUCTION for explanation of JDI). These respondents appear to be relatively satisfied with their job, with 78 percent finding their job interesting, 86 percent feeling their training is being utilized at least fairly well, and 48 percent planning to reenlist.

II. AIRCRAFT CONTROL AND WARNING (AC & W) RADAR MAINTENANCE PERSONNEL (GRP269). This cluster of 293 DAFSC 303X2 respondents is the second largest major job group identified. These respondents perform a technical job involving the maintenance of aircraft control and warning radars and associated systems. Like the above cluster, Table 4 reveals these incumbents spend a majority of their job time performing technical radar duties, with typical tasks including:

perform PMIs on antenna equipment
lubricate antenna drive equipment
check transmitter pulse transformer oil
isolate waveguide pressurizer/dehydrator system malfunctions
remove or replace waveguide sections
perform PMIs on IFF/SIF equipment

These incumbents perform the second highest average number of tasks (211) and have the second highest JDI (15.4). Most of these personnel belong to TAC, and maintain such radar systems as the AN/TPS-43E, AN/FPS-26A, AN/FPN-20 and AN/FPN-6/90. These respondents have relatively average job satisfaction indicators, with 63 percent finding their job interesting and 80 percent perceiving their job utilizes their talents at least fairly well.

III AUTOMATIC TRACKING RADAR (ATR) PERSONNEL (GRP193). The 273 DAFSC 303X3 personnel who make up this cluster are somewhat unique in the fact that they spend substantial amounts of time both operating and maintaining radar equipment. These incumbents operate and maintain the radars used to provide radar bomb scoring (RBS), ground directed bombing

(GDB) and electronic warfare (EW) threats. Some of the equipment these incumbents maintain include the AN/MSQ-77, AN/MPS-9, AN/TLQ-11, and AN/MPS-T1, and typically perform such tasks as:

perform PMIs on transmitter equipment
align automatic frequency control (AFC) circuits
perform PMIs on range and angle track equipment
interpret plans, diagrams, and schematics
boresight antennas
perform operational checks of azimuth, elevation, or range automatic tracking circuits

Most of these respondents (86 percent) are a SAC or TAC resource, the main difference being that SAC personnel in this cluster concentrate on RBS and the simulation of strategic EW threats, while TAC personnel are more involved with the simulation of tactical EW threats. These incumbents have average job satisfaction indicators, with 59 percent finding their job interesting and 47 percent planning to reenlist.

IV. PRECISION APPROACH RADAR REPAIRMEN (GRP238). Ninety-three percent of the 13 respondents identified in this independent job type hold DAFSC 30331 or 30351. A majority of these incumbents maintain the AN/FPN-16/61 precision approach radar or the AN/FPN-47 airport surveillance radar. These respondents perform a job very similar to ATC Radar Maintenance Personnel identified earier, but perform a substantially lower number of tasks and seem to have a lower experience level. Thirty-nine percent of their job time is spent performing general or preventive maintenance, and typical tasks include:

remove or replace relays
clean or replace air or moisture filters
perform PMIs on display equipment
perform soldering on circuit boards
perform power supply operational checks
align precision map generators

Eight-five percent of these personnel are assigned to AFCC, and 92 percent are located in CONUS. Job satisfaction appears to be fair, with 70 percent finding their job interesting and 53 percent planning to reenlist.

V. JUNIOR AIRCRAFT CONTROL AND WARNING (AC & W) RADAR MAINTENANCE PERSONNEL (GRP255). This cluster of 50 personnel perform a job very similar to AC and W Radar Maintenance Personnel identified earlier, but are more junior and only perform about a third of the tasks performed by the more senior group. These incumbents are responsible for maintaining such AC and W equipment as the OA-270, AN/FPS-27A, or the AN/UPM-137. Forty-three percent of these incumbents' time is spent performing general or preventive maintenance, and typical tasks include:

perform PMIs on antenna equipment
perform PMIs on transmitter equipment
lubricate mechanical bearing surfaces
remove or replace transformers
adjust azimuth blankers
bleed waveguide pressurizer/dehydrator systems

As expected, a fairly high percentage (88 percent) of these personnel hold DAFSC 30332 or 30352, and 84 percent are assigned to TAC. Job satisfaction indicators appear to be relatively low, with only 46 percent finding their job interesting and 42 percent planning to reenlist.

VI. ANCILLARY MAINTENANCE PERSONNEL (GRP285). This independent job type is the only major technical job identified where substantial percentages of personnel from more than one career ladder can be found. Half of these respondents are an AFCC resource and hold DAFSC 30331 or 30351, while the remainder hold DAFSC 30352 or 30372 and are primarily a TAC resource. These ten incumbents are differentiated due to the large amount of job time they spend maintaining ancillary and display equipment. Typical tasks performed by these personnel include:

align indicator deflection amplifiers
align video mappers
align indicator focus coils
align precision map generators
remove or replace indicator range mark generators
remove or replace semiconductor devices

These incumbents perform a relatively high average number of tasks (150) and supervise an average of one person. Job satisfaction indicators are mixed for these respondents, with 60 percent finding their job interesting, 80 percent perceiving their job utilizes their talents at least fairly well, but only 30 percent plan to reenlist.

VII. TACTICAL RADAR CREW MEMBERS (GRP282). Seventy-three percent of the 11 personnel assigned to this job are located overseas and are USAFE resources. These DAFSC 303X2 personnel are responsible for maintaining the AN/TPS-43E tactical radar system. This is a mobile radar system, and this is reflected in the fact that these incumbents spend 23 percent of their job time performing installation and removal functions. These incumbents perform an average of 58 tasks, some of which include:

erect mobile radar antennas
level shelters or vans
install or remove mobilizers or transporters
install or disassemble waveguide systems
perform operational checks of IFF/SIF radar systems
perform PMIs on antenna equipment

These incumbents have an average paygrade of E-4, and have a relatively low JDI (7.6). These personnel have average job satisfaction indicators, with 82 percent perceiving their training is being utilized at least fairly well, and 55 percent planning to reenlist.

VIII. ELECTRICAL INSTALLATION TEAM MEMBERS (GRP374). This independent job type of 13 personnel primarily hold DAFSC 303X1, and are differentiated due to the large amounts of job time they spend performing installation and removal functions. These incumbents are responsible for installing or disassembling fixed radar systems, and spend very little time performing standard maintenance on radar systems. Only 46 percent of these incumbents are located in CONUS, and all are an AFCC resource. Typical tasks performed by these incumbents include:

drill and tap holes for mounting equipment
install or remove radar system wiring or cables
inventory scheme materials
install or disassemble plan position indicator systems
install or remove equipment cabinets
install or disassemble fixed radar antenna systems

These incumbents have an average paygrade of E-5, and appear to be relatively satisfied with their job, with 62 percent of these personnel planning to reenlist.

IX. OPERATIONS CREW MEMBERS (GRP349). This is an independent job type of 29 303X3 SAC personnel who spend 80 percent of their job time performing operator functions. Eighty-nine percent of these incumbents hold the 3- or 5-skill level and all are assigned to various detachments of the First Combat Evaluation Group (1st CEVG). These personnel are responsible for performing radar bomb scoring (RBS) or providing electronic warfare (EW) threats for SAC bomber crews. Typical tasks performed by these operations oriented personnel include:

record bomb away times
operate plotting boards
perform RBS mission run scorings
confirm ECM scores
measure autorange or autoangles
perform I band radar search or lock-on procedures

These incumbents have an average paygrade of E-4 and perform an average of 71 tasks. Seventy-two percent of these respondents are located in CONUS, and these incumbents have a JDI of 6.3. Job satisfaction data indicates these incumbents are fairly dissatisfied with their job, with only 41 percent finding their job interesting and only 45 percent planning to reenlist.

X. OPERATIONS MAINTENANCE PERSONNEL (GRP318). This independent job type of 28 303X3 personnel performs a job somewhat similar to the above major job group in that both groups spend large amounts of time performing SAC RBS missions or providing strategic EW threats. However, these incumbents also spend substantial amounts of time performing maintenance on the radar equipment they operate (primarily the AN/MSQ-77). Representative tasks for these respondents include:

record bomb away times
perform PMIs on computer equipment
measure ground speed
perform PMIs on receiver equipment
operate plotting boards
perform PMIs on range and angle track equipment

Personnel in this major job group perform an average of 105 tasks, and have an average paygrade of E-3 or E-4. Job satisfaction indicators are low for these personnel, with only 54 percent finding their job interesting and only 46 percent perceive their talents are being utilized at least fairly well.

XI. AUTOMATIC TRACKING RADAR OPERATORS (GRP289). All of the 11 personnel in this independent job type hold DAFSC 303X3 and are a TAC resource. All of these incumbents work at Nellis AFB NV, and support the tactical missions flown out of that area. These respondents operate and maintain the AN/MPS-T1 radar set, and commonly perform such tasks as:

operate manual tracker azimuth or elevation controls
operate manual tracker range controls
perform PMIs on antenna equipment
align B scan indicators
perform I band radar search or lock-on procedures
perform soldering on circuit boards

These personnel perform a rather low average number of tasks (28) and have a low JDI (4.4). Job satisfaction data for these personnel appear realistic, with only 64 percent finding their job interesting and only 36 percent planning to reenlist.

XII. JOB CONTROL PERSONNEL (GRP188). Roughly equal percentages of personnel from all three career ladders are found in this cluster. These 72 respondents are responsible for the job control functions of the equipment maintained by the maintenance personnel in the three career ladders. Personnel in this cluster spend most of their job time performing administrative or supervisory type tasks, many of which include:

maintain status boards, graphs, or charts
issue job control numbers
prepare job/status document forms (AF Form 264)
determine work priorities
document equipment cannibalization
maintain equipment status reports

These respondents perform a very low average number of tasks (17), and the highest percentage (60 percent) are assigned to TAC. Job satisfaction data reflects the narrow type of job these incumbents perform, with only 25 percent perceiving their training is being utilized at least fairly well, and only 45 percent planning to reenlist.

XIII. RADAR MAINTENANCE SUPERVISORS (GRP208). This rather large cluster of 177 incumbents is composed of approximately equal percentages of DAFSC 303X1, 303X2, 303X3, and 30399 personnel. These incumbents are the supervisors or managers of their respective career ladder. As expected, personnel in this cluster spend large amounts of job time performing supervisory type tasks, and spend very little time performing technical tasks. Typical tasks performed by these respondents include:

prepare APRs
determine work priorities
establish work schedules
determine OJT training equipments
counsel personnel on personal or military related matters
prepare replies to inspection reports

As expected, these personnel have a high average paygrade (E-6, E-7) and supervise an average of five personnel. Job satisfaction data for these incumbents indicate that they appear to be satisfied with their job, with 71 percent finding their job interesting.

XIV. QUALITY CONTROL PERSONNEL (GRP247). Like the above two clusters, the personnel identified in this cluster also come from all three career ladders. These rather senior NCOs are responsible for the quality control or quality assurance programs found in the radar maintenance career ladders. As expected, these personnel spend a large percentage of job time inspecting and evaluating (49 percent) or performing administrative type tasks (19 percent). Representative tasks performed by these personnel include:

perform equipment inspections
prepare inspection reports
evaluate compliance with performance standards
evaluate maintenance procedures
analyze trends in system malfunctions
perform deficiency analysis

Forty-three percent of these incumbents are assigned to TAC, and 27 percent are assigned to AFCC. Job satisfaction indicators reveal that 40 percent of these incumbents plan to retire, and 46 percent plan to reenlist.

XV. NCOICs, PLANS AND SCHEDULING (GRP461). The 14 personnel identified in this independent job type are primarily DAFSC 303X2 personnel. These respondents are responsible for planning or scheduling periodic maintenance for AC and W radar and associated equipment. As expected, personnel in this major job group spent almost all of their job time performing supervisory, administrative, or supply related tasks, many of which include:

prepare punch card transcript forms (AF Form 1530)
develop equipment operations or maintenance schedules
maintain preventive maintenance inspections listings
maintain precision measurement equipment (PME) calibration schedules
plan equipment or facility maintenance requirements
maintain time compliance technical order requirements

As expected, most of these incumbents are assigned to TAC (65 percent) and have a fairly high average paygrade (E-6). Job satisfaction data is mixed, with a relatively high percentage (79 percent) of personnel perceiving their talents are utilized at least fairly well, but only a low percentage (29 percent) feel their training is being utilized at least fairly well.

XVI. AUTOMATIC TRACKING RADAR (ATR) WORK CENTER SUPERVISORS (GRP315). Most of these DAFSC 303X3 personnel are working at Nellis AFB NV and seem to be the first-line supervisors at that base's radar work centers. As expected, most of these 11 incumbents (73 percent) are assigned to TAC, and most hold the 7- or 9-skill level. These respondents roughly divide their job time on supervisory and technical radar maintenance duties, and typically perform such tasks as:

supervise Automatic Tracking Radar Specialists (AFSC 30353)
prepare APRs
remove or replace resistors
perform PMIs on antenna equipment
assign on-the-job training (OJT) trainers
perform soldering on wiring terminals or connectors plugs

These incumbents supervise an average of six personnel, and perform an average of 101 tasks. These incumbents appear to be satisfied with their job, since 73 percent find their job interesting and 64 percent plan to reenlist.

XVII. TACTICAL RADAR MAINTENANCE NCOICs (GRP299). Most of the 20 personnel in this independent job type are assigned to USAFE. These incumbents spend substantial amounts of job time performing both supervisory and technical radar maintenance tasks. These personnel appear to be the first-line supervisors for AN/TPS-43E radar crews, with typical tasks being:

erect mobile radar antennas
level shelters or vans
conduct OJT
supervise Aircraft Control and Warning (AC & W) Radar Specialists (AFSC 30352)
load or offload equipment on trucks or aircraft
prepare supply issue/turn-in requests forms (AF Form 2005)

As expected, only a few of these respondents (20 percent) are stationed in CONUS, and most hold DAFSC 30372. Job satisfaction indicators reveal these incumbents are fairly motivated with their job, with 75 percent finding their job interesting, and 85 percent feeling their talents are being utilized at least fairly well.

XVIII. RESIDENT COURSE INSTRUCTORS (GRP553). This independent job type is composed of substantial percentages of personnel from all three career ladders. These 52 incumbents are responsible for conducting the resident courses held at Keesler AFB MS for their respective specialty. As expected, these respondents spend a majority of their job time (81 percent) performing training type tasks, such as:

prepare lesson plans
score tests
conduct resident course classroom training
counsel trainees on training progress
develop training aids
conduct safety training

As expected, all of these incumbents are assigned to ATC, and all are located in CONUS. Even though these personnel perform one of the lowest average number of tasks (15), job satisfaction data reveals these personnel are among the most motivated of all the job groups. Eighty-six percent of these respondents find their job interesting, and 92 percent perceive their training is being utilized at least fairly well.

XIX. OPERATIONS ANALYSTS (GRP839). The ten respondents making up this independent job type perform a very low average number of tasks (15). These incumbents spend 85 percent of their job time performing radar operator functions, and spend little, if any, job time performing radar maintenance. All of these personnel are assigned to SAC, and are responsible for operating the radar and associated equipment used for RBS and EW missions. Typical tasks performed by these personnel include:

measure ground speed
measure aircraft tracks
measure autoangles
measure circular errors or azimuths
encode RBS scores
confirm ECM scores

These incumbents perform many of the same tasks as Operations Crew Members described earlier, but perform substantially fewer tasks. As expected, these incumbents are rather junior (all holding the 3- or 5-skill level) and have the lowest JDI (4.1). Also somewhat expectedly, job satisfaction data for these incumbents is poor, with only 40 percent finding their job interesting and only 50 percent perceiving their talents are being utilized at least fairly well.

Summary

Due to the apparent diversity of the technical jobs performed by the personnel of the three radar maintenance career ladders, it does not appear feasible to merge any or all of the career ladders. Only one technical job (Ancillary Maintenance Personnel) was identified as having substantial percentages of personnel from more than one specialty. Only in the nontechnical jobs, for example Job Control Personnel, were substantial percentages of personnel from all three specialties represented.

Job satisfaction indicators vary substantially from major job group to major job group. Managers of the personnel who are performing jobs similar to Junior AC and W Radar Maintenance Personnel, Operations Crew Members, Job Control Personnel, and Operations Analysts need to be aware of the low job satisfaction indicators of these groups, and should try and find ways to broaden some of these narrow jobs to improve morale.

TABLE 4

RELATIVE PERCENT TIME SPENT ON DUTIES BY MAJOR JOB GROUPS

DUTIES	ATC RADAR MAINT. PERSONNEL (GRP292, N=529)	AC & W RADAR MAINT. PERSONNEL (GRP269, N=293)	ATR PERSONNEL (GRP193, N=273)	PRECISION APPROACH RADAR REPAIRMEN (GRP238, N=13)	JUNIOR AC & W RADAR MAINT. PERSONNEL (GRP255, N=50)	ANCILLARY MAINT. PERSONNEL (GRP285, N=10)	TACTICAL RADAR CREW MEMBERS (GRP282, N=11)
ORGANIZING AND PLANNING	2	*	1	*	*	2	*
DIRECTING AND IMPLEMENTING	2	2	2	*	*	2	*
INSPECTING AND EVALUATING	2	2	2	1	2	3	*
TRAINING	1	1	1	*	*	2	*
PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	5	5	4	5	7	7	11
PERFORMING OPERATIONS FUNCTIONS	4	6	21	7	7	2	12
PERFORMING SITE SUPPORT FUNCTIONS	2	2	3	3	3	3	5
PERFORMING RADAR SYSTEM INSTALLATION AND REMOVAL FUNCTIONS	2	5	3	1	2	4	23
PERFORMING GENERAL AND PREVENTIVE MAINTENANCE	17	25	23	39	43	23	29
MAINTAINING POWER AND DISTRIBUTION EQUIPMENT	3	4	4	6	3	5	*
MAINTAINING TIMING SYSTEMS	4	2	2	1	*	*	*
MAINTAINING TRANSMITTER SYSTEMS	10	17	8	9	14	1	5
MAINTAINING ANTENNA SYSTEMS	6	5	6	2	5	2	3
MAINTAINING RECEIVER SYSTEMS	15	11	5	7	5	3	6
MAINTAINING DISPLAY EQUIPMENT	11	5	5	10	4	23	1
MAINTAINING REMOTE EQUIPMENT	2	*	*	2	*	*	*
MAINTAINING ANCILLARY EQUIPMENT	8	*	2	3	*	15	*
MAINTAINING IDENTIFICATION FRIEND OR FOE (IFF) AND SELECTIVE IDENTIFICATION FEATURE (SIF) EQUIPMENT	5	5	1	1	1	3	2
MAINTAINING RANGE AND ANGLE TRACKING SYSTEMS	*	*	4	*	*	*	*
MAINTAINING COMPUTER SYSTEMS	*	*	3	*	*	*	*

* DENOTES LESS THAN ONE PERCENT

TABLE 5

RELATIVE PERCENT TIME SPENT ON DUTIES BY MAJOR JOB GROUPS

DUTIES	ELECTRICAL INSTALLATION TEAM MEMBERS (GRP374, N=13)	OPERATIONS CREW MEMBERS (GRP349, N=29)	OPERATIONS MAINT. PERSONNEL (GRP318, N=28)	ATR OPERATORS (GRP289, N=11)	JOB CONTROL PERSONNEL (GRP188, N=72)	RADAR MAINT. SUPERVISORS (GRP208, N=177)	QUALITY CONTROL PERSONNEL (GRP247, N=114)
ORGANIZING AND PLANNING	3	*	*	*	11	17	11
DIRECTING AND IMPLEMENTING	7	2	*	*	10	22	10
INSPECTING AND EVALUATING	4	*	*	1	6	24	49
TRAINING	3	2	*	*	3	11	4
PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	4	*	2	7	47	16	19
PERFORMING OPERATIONS FUNCTIONS	1	80	47	33	4	3	*
PERFORMING SITE SUPPORT FUNCTIONS	12	3	3	10	15	3	3
PERFORMING RADAR SYSTEM INSTALLATION AND REMOVAL FUNCTIONS	39	*	2	*	*	*	*
PERFORMING GENERAL AND PREVENTIVE MAINTENANCE	19	6	23	32	1	1	*
MAINTAINING POWER AND DISTRIBUTION EQUIPMENT	*	*	3	4	*	*	*
MAINTAINING TIMING SYSTEMS	*	*	*	*	*	*	*
MAINTAINING TRANSMITTER SYSTEMS	1	*	3	1	*	*	*
MAINTAINING ANTENNA SYSTEMS	2	*	2	*	*	*	*
MAINTAINING RECEIVER SYSTEMS	*	*	2	1	*	*	*
MAINTAINING DISPLAY EQUIPMENT	*	*	2	8	2	*	*
MAINTAINING REMOTE EQUIPMENT	*	*	*	*	*	*	*
MAINTAINING ANCILLARY EQUIPMENT	*	*	1	*	1	*	*
MAINTAINING IDENTIFICATION FRIEND OR FOE (IFF) AND SELECTIVE IDENTIFICATION FEATURE (SIF) EQUIPMENT	*	*	*	*	*	*	*
MAINTAINING RANGE AND ANGLE TRACKING SYSTEMS	*	*	3	*	*	*	*
MAINTAINING COMPUTER SYSTEMS	*	*	*	*	*	*	*

* DENOTES LESS THAN ONE PERCENT

TABLE 6

RELATIVE PERCENT TIME SPENT ON DUTIES BY MAJOR JOB GROUPS

DUTIES	NCOICs, PLANS AND SCHEDULING (GRP461, N=14)	ATR WORK CENTER SUPERVISORS (GRP315, N=11)	TACTICAL RADAR MAINT. NCOICs (GRP299, N=20)	RESIDENT COURSE INSTRUCTORS (GRP553, N=52)	OPERATIONS ANALYSTS (GRP839, N=10)
ORGANIZING AND PLANNING	20	7	8	3	1
DIRECTING AND IMPLEMENTING	14	9	8	5	4
INSPECTING AND EVALUATING	16	9	8	3	2
TRAINING	4	8	4	81	3
PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	40	14	17	6	3
PERFORMING OPERATIONS FUNCTIONS	1	10	4	1	85
PERFORMING SITE SUPPORT FUNCTIONS	2	4	6	*	2
PERFORMING RADAR SYSTEM INSTALLATION AND REMOVAL FUNCTIONS	*	1	16	*	*
PERFORMING GENERAL AND PREVENTIVE MAINTENANCE	*	20	14	*	*
MAINTAINING POWER AND DISTRIBUTION EQUIPMENT	*	3	1	*	*
MAINTAINING TIMING SYSTEMS	*	*	*	*	*
MAINTAINING TRANSMITTER SYSTEMS	*	3	4	*	*
MAINTAINING ANTENNA SYSTEMS	*	2	2	*	*
MAINTAINING RECEIVER SYSTEMS	*	2	3	*	*
MAINTAINING DISPLAY EQUIPMENT	*	4	*	*	*
MAINTAINING REMOTE EQUIPMENT	*	*	*	*	*
MAINTAINING ANCILLARY EQUIPMENT	*	1	*	*	*
MAINTAINING IDENTIFICATION FRIEND OR FOE (IFF) AND SELECTIVE IDENTIFICATION FEATURE (SIF) EQUIPMENT	*	*	4	*	*
MAINTAINING RANGE AND ANGLE TRACKING SYSTEMS	*	2	*	*	*
MAINTAINING COMPUTER SYSTEMS	*	*	*	*	*

* DENOTES LESS THAN ONE PERCENT

TABLE 7

BACKGROUND INFORMATION FOR MAJOR JOB GROUPS

	ATC RADAR MAINT. PERSONNEL	AC & W RADAR MAINT. PERSONNEL	ATR PERSONNEL	PRECISION APPROACH RADAR REPAIRMEN	JUNIOR AC & W RADAR MAINT. PERSONNEL	ANCILLARY MAINT. PERSONNEL	TACTICAL RADAR CREW MEMBERS	ELECTRICAL INSTALLATION TEAM MEMBERS
AVERAGE NUMBER OF TASKS PERFORMED:	317	211	186	57	64	150	58	96
JOB DIFFICULTY INDEX:	19.1	15.4	13.7	8.4	7.8	14.0	7.6	11.5
AVERAGE PAYGRADE:	E-4, E-5	E-4, E-5	E-4	E-3, E-4	E-3, E-4	E-4, E-5	E-4	E-5
PERCENT LOCATED IN CONUS:	68%	74%	85%	92%	96%	80%	27%	46%
AVERAGE NUMBER OF PERSONS SUPERVISED:	1	1	1	-	-	1	-	1
DAFSC:								
30331	16%	-	-	62%	6%	10%	-	-
30351	53%	-	-	31%	-	40%	-	31%
30371	25%	-	-	-	-	-	-	53%
30332	-	7%	-	-	26%	-	27%	-
30352	2%	68%	-	7%	62%	20%	73%	8%
30372	3%	24%	-	-	2%	30%	-	8%
30333	-	-	11%	-	-	-	-	-
30353	-	1%	74%	-	4%	-	-	-
30373	-	-	15%	-	-	-	-	-
30399	1%	-	-	-	-	-	-	-
MAJOR COMMAND:								
AFCC	88%	9%	2%	85%	12%	50%	-	100%
ATC	-	-	-	-	2%	-	-	-
SAC	2%	-	54%	-	2%	-	-	-
TAC	6%	72%	32%	15%	84%	40%	27%	-
USAFE	-	15%	-	-	-	-	73%	-
PACAF	-	3%	7%	-	-	10%	-	-
AFSC	2%	-	3%	-	-	-	-	-
AAC	-	-		-	-	-	-	-
OTHER	2%	1%	2%	-	-	-	-	-

TABLE 8

BACKGROUND INFORMATION FOR MAJOR JOB GROUPS

	OPERATIONS CREW MEMBERS	OPERATIONS MAINT. PERSONNEL	ATR OPERATORS	JOB CONTROL PERSONNEL	RADAR MAINT. SUPERVISORS	QUALITY CONTROL PERSONNEL	NCOICs, PLANS AND SCHEDULING	ATR WORK CENTER SUPERVISORS
AVERAGE NUMBER OF TASKS PERFORMED:	71	105	28	17	84	56	33	101
JOB DIFFICULTY INDEX:	6.3	8.8	4.4	5.6	12.1	11.7	9.0	11.0
AVERAGE PAYGRADE:	E-4	E-3, E-4	E-3	E-4, E-5	E-6, E-7	E-6	E-6	E-5
PERCENT LOCATED IN CONUS:	72%	79%	91%	89%	85%	83%	79%	100%
AVERAGE NUMBER OF PERSONS SUPERVISED:	1	-	-	1	5	-	2	6
DAFSC:								
30331	-	-	-	-	-	-	-	-
30351	-	-	-	13%	4%	3%	-	-
30371	-	-	-	6%	13%	21%	7%	-
30332	-	-	-	-	-	-	-	-
30352	-	-	-	39%	1%	5%	21%	-
30372	-	-	-	18%	21%	37%	57%	-
30333	17%	18%	91%	1%	-	-	-	-
30353	72%	79%	9%	19%	7%	4%	-	9%
30373	11%	3%	-	4%	26%	19%	15%	55%
30399	-	-	-	-	28%	11%	-	36%
MAJOR COMMAND:								
AFCC	-	-	-	26%	27%	27%	14%	-
ATC	-	-	-	-	3%	-	-	-
SAC	100%	100%	-	7%	24%	13%	-	18%
TAC	-	-	100%	60%	38%	43%	65%	73%
USAFE	-	-	-	3%	6%	12%	14%	-
PACAF	-	-	-	1%	2%	2%	7%	9%
AFSC	-	-	-	3%	-	3%	-	-
AAC	-	-	-	-	-	-	-	-
OTHER	-	-	-	-	-	-	-	-

TABLE 9

BACKGROUND INFORMATION FOR MAJOR JOB GROUPS

	TACTICAL RADAR MAINT. NCOICs	RESIDENT COURSE INSTRUCTORS	OPERATIONS ANALYSTS
AVERAGE NUMBER OF TASKS PERFORMED:	131	15	15
JOB DIFFICULTY INDEX:	12.1	9.5	4.1
AVERAGE PAYGRADE:	E-5, E-6	E-5	E-4
PERCENT LOCATED IN CONUS:	20%	100%	100%
AVERAGE NUMBER OF PERSONS SUPERVISED:	3	1	-
DAFSC:			
30331	-	8%	-
30351	-	25%	-
30371	-	10%	-
30332	-	2%	-
30352	25%	23%	-
30372	70%	17%	-
30333	-	-	30%
30353	-	8%	70%
30373	5%	7%	-
30399	-	-	-
MAJOR COMMAND:			
AFCC	-	-	-
ATC	-	100%	-
SAC	-	-	100%
TAC	25%	-	-
USAFE	70%	-	-
PACAF	5%	-	-
AFSC	-	-	-
AAC	-	-	-
OTHER	-	-	-

TABLE 10

JOB SATISFACTION DATA FOR MAJOR JOB GROUPS
(PERCENT MEMBERS RESPONDING)

	ATC RADAR MAINT. PERSONNEL	AC & W RADAR MAINT. PERSONNEL	ATR PERSONNEL	PRECISION APPROACH RADAR REPAIRMEN	JUNIOR AC & W RADAR MAINT. PERSONNEL	ANCILLARY MAINT. PERSONNEL	TACTICAL RADAR CREW MEMBERS	ELECTRICAL INSTALLATION TEAM MEMBERS
I FIND MY JOB:								
NO RESPONSE	2	-	-	-	-	-	-	-
DULL	7	18	19	15	32	20	27	15
SO-SO	13	19	22	15	22	20	9	15
INTERESTING	78	63	59	70	46	60	64	70
MY JOB UTILIZES MY TALENTS:								
NO RESPONSE	1	-	-	-	-	-	-	-
NOT AT ALL TO VERY LITTLE	14	26	22	31	52	20	46	23
FAIRLY WELL OR BETTER	85	74	78	69	48	80	54	77
MY JOB UTILIZES MY TRAINING:								
NO RESPONSE	1	-	-	-	-	-	-	-
NOT AT ALL TO VERY LITTLE	13	20	21	31	26	30	18	39
FAIRLY WELL OR BETTER	86	80	79	69	74	70	82	61
I PLAN TO REENLIST:								
NO RESPONSE	3	1	3	8	-	-	-	-
NO, PLANNING TO RETIRE	6	5	1	-	2	10	-	8
NO OR PROBABLY NO	43	52	49	39	56	60	45	30
YES OR PROBABLY YES	48	42	47	53	42	30	55	62

TABLE 11

JOB SATISFACTION DATA FOR MAJOR JOB GROUPS
(PERCENT MEMBERS RESPONDING)

	OPERATIONS CREW MEMBERS	OPERATIONS MAINT. PERSONNEL	ATR OPERATORS	JOB CONTROL PERSONNEL	RADAR MAINT. SUPERVISORS	QUALITY CONTROL PERSONNEL	NCOICs, PLANS AND SCHEDULING	ATR WORK CENTER SUPERVISORS
I FIND MY JOB:								
NO RESPONSE	-	-	-	-	1	1	-	-
DULL	38	21	18	25	16	18	29	9
SO-SO	21	25	18	24	12	20	14	18
INTERESTING	41	54	64	51	71	61	57	73
MY JOB UTILIZES MY TALENTS:								
NO RESPONSE	-	-	-	-	1	-	-	-
NOT AT ALL TO VERY LITTLE	59	54	36	53	25	25	21	27
FAIRLY WELL OR BETTER	41	46	64	47	74	75	79	73
MY JOB UTILIZES MY TRAINING:								
NO RESPONSE	-	-	-	-	1	2	-	-
NOT AT ALL TO VERY LITTLE	48	29	36	75	28	26	71	18
FAIRLY WELL OR BETTER	52	71	64	25	71	72	29	82
I PLAN TO REENLIST:								
NO RESPONSE	-	4	-	-	3	1	-	-
NO, PLANNING TO RETIRE	-	-	-	13	36	40	29	-
NO OR PROBABLY NO	55	46	64	42	14	13	14	36
YES OR PROBABLY YES	45	50	36	45	47	46	57	64

TABLE 12

JOB SATISFACTION DATA FOR MAJOR JOB GROUPS
(PERCENT MEMBERS RESPONDING)

	TACTICAL RADAR MAINT. NCOICs	RESIDENT COURSE INSTRUCTORS	OPERATIONS ANALYSTS
I FIND MY JOB:			
NO RESPONSE	-	-	-
DULL	15	8	40
SO-SO	10	6	20
INTERESTING	75	86	40
MY JOB UTILIZES MY TALENTS:			
NO RESPONSE	-	-	-
NOT AT ALL TO VERY LITTLE	15	8	50
FAIRLY WELL OR BETTER	85	92	50
MY JOB UTILIZES MY TRAINING:			
NO RESPONSE	-	2	-
NOT AT ALL TO VERY LITTLE	20	6	50
FAIRLY WELL OR BETTER	80	92	50
I PLAN TO REENLIST:			
NO RESPONSE	-	2	-
NO, PLANNING TO RETIRE	10	10	-
NO OR PROBABLY NO	30	34	40
YES OR PROBABLY YES	60	54	60

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups forms a part of each occupational analysis. Normally, this type of analysis is used to identify differences between skill level groups in a given career ladder. However in this report, this analysis will examine the tasks and duties which are performed in common by the personnel in each specialty, as well as revealing the tasks and duties which best differentiate each career ladder. (For an analysis of the differences between skill level groups within the 303X1, 303X2, or 303X3 career ladders, see the respective Occupational Survey Reports concerning each specialty, AFPT 90-303-400, Volumes II, III or IV.)

Table 13 provides the relative percent time spent on duties for DAFSC 303X1, 303X2, 303X3, and 30399 personnel. This table can help give a general overview of each career ladder by indicating the duty areas career ladder incumbents spent most of their job time performing. DAFSC 303X1 personnel appear to be primarily radar maintenance oriented, spending a majority of their job time performing radar maintenance related duties. These respondents spend 20 percent of their job time maintaining receiver or display equipment, which is a higher percentage of job time than all other DAFSC groups. DAFSC 303X2 personnel are also primarily radar maintenance oriented, and these personnel spend similar amounts of time performing many of the same radar maintenance duties as DAFSC 303X1 personnel. DAFSC 303X3 personnel do not spend as much time on radar maintenance duties as 303X1 or 303X2 personnel. These respondents are differentiated by the large percentage of time spent performing radar operations functions. Finally, Table 13 reveals DAFSC 30399 personnel spend very little job time performing radar operations or maintenance duties. Instead, these personnel spend over 80 percent of their job time performing various supervisory type duties.

Table 14 reveals the DAFSC distribution of the three career ladders across the 19 major job groups identified in the CAREER LADDER STRUCTURE section of this report. The bulk of 303X1 personnel seem to fall into the ATC Radar Maintenance Personnel cluster. This is to be expected since the personnel in this cluster spend a majority of their job time performing maintenance on ATC type radars. A majority of 303X2 personnel can be found in the AC and W Radar Maintenance Personnel cluster. The personnel in this major job group are also primarily radar maintenance oriented, but are responsible for maintaining AC and W radar systems and associated equipment. Most of the 303X3 personnel surveyed can be found in the ATR Personnel cluster. As the previous section indicates, these personnel are responsible for the operation and maintenance of various types of autotrack radars.

Table 15 provides representative tasks performed by 30351, 30352, and 30353 personnel. This table reveals the types of technical tasks which are performed by smiliar percentages of these 5-skill level personnel, and also lists those tasks which best differentiate these DAFSC groups. General radar maintenance type tasks, such as performing PMIs on display equipment, interpreting plans or diagrams, performing corrosion control on antenna pedestals, or removing or replacing fuses or fuse holders are performed by high percentages of 5-skill level personnel from all three career ladders. Various types of radar maintenance tasks, such as aligning stagger PRF systems, aligning precision magnetron transmitters, or isolating IFF/SIF IDP

malfunctions are performed by substantially higher percentages of DAFSC 30351 personnel. In addition, Table 16 reveals that 303X1 personnel perform the highest average number of tasks (233), have the highest percentage of personnel stationed overseas (28 percent), and have the highest percentage of personnel maintaining the AN/FPN-16/61 or AN/FPN-47 radar systems. Several radar maintenance and mobile radar-related tasks differentiate DAFSC 30352 personnel, and include adjusting waveguide pressurizer systems, transporting vans to operating locations, or installing mobile IFF/SIF antennas. A review of background information reveals 303X2 incumbents perform the second highest average number of tasks (125), 65 percent are assigned to TAC, and a high percentage of these personnel maintain the AN/TPS-43E radar set or AN/UPX-23 interrogator system. Operations related tasks make up a majority of the technical tasks which best distinguish DAFSC 30353 personnel from DAFSC 30351 or 30352 personnel. Examples of these operations tasks include confirming RBS scores, identifying tracked aircraft, or advising other crew positions of automatic radar lock-ons. Table 16 reveals that a majority of these personnel are assigned to SAC (54 percent), almost half (49 percent) are in their first enlistment, and only 14 percent are stationed overseas. DAFSC 303X3 incumbents are also much more likely to maintain various types of autotrack radars, such as the AN/MPS-T1, AN/MSQ-77, or AN/MPS-9 than the personnel in the 303X1 or 303X2 career ladders.

Finally, Table 17 reveals job satisfaction data for DAFSC 303X1, 303X2, 303X3, and 30399 personnel. DAFSC 303X1 personnel appear to be the most satisfied, with these respondents reporting the highest percentages of personnel finding their job interesting and perceiving their talents and training is being utilized at least fairly well. Only 56 percent of 303X3 personnel find their job interesting which is the lowest percentage of all four DAFSC groups. However, 50 percent of all 303X3 personnel plan to reenlist, which is the highest percentage of all DAFSC groups. Finally, DAFSC 30399 personnel are somewhat unique in the fact that these incumbents have the lowest reenlistment intentions (36 percent) and have the highest percentage of personnel planning to retire (51 percent) of all DAFSC groups.

Summary

DAFSC 303X1 personnel are primarily maintenance oriented, and are responsible for maintaining various types of ATC radar systems. These incumbents also perform the highest average number of tasks and are the most satisfied of all DAFSC groups. DAFSC 303X2 personnel are also primarily maintenance oriented, and are responsible for maintaining AC and W radar systems. Mobile radar type tasks, such as erecting mobile antennas, are among the tasks which best differentiate these incumbents. DAFSC 303X3 personnel are both radar operators and maintainers. These incumbents operate and maintain various types of automatic tracking radar systems, and it is interesting to note almost half of these incumbents are in their first enlistment. Finally, DAFSC 30399 personnel spend over 80 percent of their job time performing supervisory duties. Very few of these incumbents maintain any type of radar equipment, and it is interesting to note that 51 percent of DAFSC 30399 personnel plan to retire instead of reenlisting.

TABLE 13

RELATIVE PERCENT TIME SPENT ON DUTIES BY DAFSC 303XX GROUPS

DUTIES	DAFSC 303X1 PERSONNEL (N=750)	DAFSC 303X2 PERSONNEL (N=724)	DAFSC 303X3 PERSONNEL (N=661)	DAFSC 30399 PERSONNEL (N=88)
ORGANIZING AND PLANNING	3	5	4	20
DIRECTING AND IMPLEMENTING	3	6	6	23
INSPECTING AND EVALUATING	5	9	7	34
TRAINING	5	6	5	5
PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	9	12	8	11
PERFORMING OPERATIONS FUNCTIONS	4	5	23	*
PERFORMING SITE SUPPORT FUNCTIONS	3	4	4	2
PERFORMING RADAR SYSTEM INSTALLATION AND REMOVAL FUNCTIONS	3	4	3	*
PERFORMING GENERAL AND PREVENTIVE MAINTENANCE	15	18	6	*
MAINTAINING POWER AND DISTRIBUTION EQUIPMENT	2	3	2	*
MAINTAINING TIMING SYSTEMS	3	1	*	*
MAINTAINING TRANSMITTER SYSTEMS	7	9	5	*
MAINTAINING ANTENNA SYSTEMS	4	3	3	*
MAINTAINING RECEIVER SYSTEMS	11	6	3	*
MAINTAINING DISPLAY EQUIPMENT	9	4	4	*
MAINTAINING REMOTE EQUIPMENT	2	*	*	*
MAINTAINING ANCILLARY EQUIPMENT	6	*	1	*
MAINTAINING IDENTIFICATION FRIEND OR FOE (IFF) AND SELECTIVE IDENTIFICATION FEATURE (SIF) EQUIPMENT	4	3	*	*
MAINTAINING RANGE AND ANGLE TRACKING SYSTEMS	*	*	2	*
MAINTAINING COMPUTER SYSTEMS	*	*	2	*

* DENOTES LESS THAN ONE PERCENT

TABLE 14

DAFSC DISTRIBUTION FOR MAJOR JOB GROUPS

MAJOR JOB GROUPS	DAFSC 30331	30351	30371	30332	30352	30372	30333	30353	30373	30399
ATC RADAR MAINT PERSONNEL	85	281	132		11	15				5
AC & W RADAR MAINT. PERSONNEL				21	199	70		3		
ATR PERSONNEL							30	202	41	
PRECISION APPROACH RADAR REPAIRMEN	8	4			1					
JUNIOR AC & W RADAR MAINT. PERSONNEL	3			13	31	1		2		
ANCILLARY MAINT. PERSONNEL	1	4			2	3				
TACTICAL RADAR CREW MEMBERS				3	8					
ELECTRICAL INSTALLATION TEAM MEMBERS		4	7		1	1				
OPERATIONS CREW MEMBERS							5	21	3	
OPERATIONS MAINT. PERSONNEL							5	22	1	
ATR OPERATORS							10	1		
JOB CONTROL PERSONNEL		9	4		28	13	1	14	3	
RADAR MAINT. SUPERVISORS		7	23		2	37		12	46	50
QUALITY CONTROL PERSONNEL		4	24		6	42		5	20	13
NCOICs, PLANS AND SCHEDULING			1		3	8			2	
ATR WORK CENTER SUPERVISORS								1	6	4
TACTICAL RADAR MAINT. NCOICs					5	14			1	
RESIDENT COURSE INSTRUCTORS	4	13	5	1	12	9		4	4	
OPERATIONS ANALYSTS							3	7		
NOT GROUPED	27	69	32	11	92	62	45	102	43	16
TOTAL	128	395	228	49	401	275	99	396	170	88

TABLE 15

REPRESENTATIVE TASKS PERFORMED BY DAFSC 30351, 30352, OR 30353 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 30351 PERSONNEL (N=395)	DAFSC 30352 PERSONNEL (N=401)	DAFSC 30353 PERSONNEL (N=396)
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 344)	61	53	41
PERFORM POWER SUPPLY OPERATIONAL CHECKS	60	53	57
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	65	40	59
CLEAN OR REPLACE AIR OR MOISTURE FILERS	53	59	50
INTERPRET PLANS, DIAGRAMS, OR SCHEMATICS	40	46	43
PERFORM CORROSION CONTROL ON ANTENNA PEDESTALS OR TOWERS	47	54	55
PERFORM PMIs ON DISPLAY EQUIPMENT	68	52	42
PERFORM PMIs ON TRANSMITTER EQUIPMENT	73	64	58
REMOVE OR REPLACE CATHODE - RAY TUBES	74	54	42
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	79	67	67
ADJUST VOLTAGE REGULATORS	69	47	43
ALIGN STAGGER PRF SYSTEMS	50	13	5
ALIGN PRECISION MAGNETRON TRANSMITTERS	59	5	10
PERFORM RF SWITCH BLADE ALIGNMENTS OR ANTENNA PHASINGS	48	1	1
ADJUST PARAMETRIC AMPLIFIERS	62	8	6
ISOLATE IFF/SIF IDP MALFUNCTIONS	39	1	0
ADJUST KLYSTRON LIQUID COOLING SYSTEMS	1	28	1
ADJUST WAVEGUIDE PRESSURIZER/DEHYDRATOR SYSTEMS	7	47	23
CHECK TRANSMITTER PULSE TRANSFORMER OIL	6	48	4
TRANSPORT VANS OR EQUIPMENT SHELTERS TO OR FROM OPERATING LOCATIONS	8	19	7
INSTALL OR DISASSEMBLE MOBILE IFF/SIF ANTENNAS	13	22	4
ADVISE OTHER CREW POSITIONS OF AUTOMATIC RADAR LOCK-ONS	-	-	25
CONFIRM RBS SCORES	-	-	24
IDENTIFY TRACKED AIRCRAFT	1	2	30
REMOVE OR REPLACE TRACK RANGE COMPUTERS	1	-	23
ALIGN PLOTTING BOARDS	-	-	23

TABLE 16

BACKGROUND INFORMATION FOR DAFSC 303XX PERSONNEL

	DAFSC 303X1 PERSONNEL (N=750)	DAFSC 303X2 PERSONNEL (N=724)	DAFSC 303X3 PERSONNEL (N=661)	DAFSC 30399 PERSONNEL (N=88)
AVERAGE NUMBER OF TASKS PERFORMED:	233	125	111	73
JOB DIFFICULTY INDEX:	16.0	12.1	10.5	12.3
AVERAGE PAYGRADE:	E-4, E-5	E-4, E-5	E-4	E-7, E-8
MAJOR COMMAND:				
AFCC	88%	13%	2%	22%
SAC	2%	-	54%	18%
TAC	2%	65%	34%	48%
ATC	6%	5%	3%	-
AFSC	2%	1%	3%	1%
PACAF	-	2%	3%	5%
USAFE	-	14%	1%	6%
AVERAGE MONTHS TAFMS:	94	114	80	230
PERCENT IN FIRST ENLISTMENT:	34%	29%	49%	5%
PERCENT LOCATED OVERSEAS:	28%	22%	14%	22%
TYPES OF RADAR OR RADAR EQUIPMENT MAINTAINED:				
AN/FPN-16/61 PRECISION APPROACH RADAR	44%	5%	3%	2%
AN/FPN-47 AIRPORT SURVEILLANCE RADAR	28%	5%	3%	1%
AN/TPX-49 RANGE AZIMUTH BEACON	48%	5%	2%	2%
AN/TPS-43E RADAR SET	18%	28%	2%	1%
AN/UPX-23 INTERROGATOR SYSTEM	4%	26%	2%	-
AN/GPA-26 AMPLIFIER INDICATOR GROUP	5%	6%	12%	3%
AN/MPS-9 RADAR SET	4%	4%	12%	3%

TABLE 17

JOB SATISFACTION DATA FOR DAFSC 303XX GROUPS
(PERCENT MEMBERS RESPONDING)

	DAFSC 303X1 PERSONNEL	DAFSC 303X2 PERSONNEL	DAFSC 303X3 PERSONNEL	DAFSC 30399 PERSONNEL
I FIND MY JOB:				
NO RESPONSE	1	-	1	-
DULL	9	22	23	16
SO-SO	14	18	20	11
INTERESTING	76	60	56	73
MY JOB UTILIZES MY TALENTS:				
NO RESPONSE	1	-	1	-
NOT AT ALL TO VERY LITTLE	18	31	33	20
FAIRLY WELL OR BETTER	81	69	66	80
MY JOB UTILIZES MY TRAINING:				
NO RESPONSE	1	1	1	1
NOT AT ALL TO VERY LITTLE	18	29	34	25
FAIRLY WELL OR BETTER	81	70	65	74
I PLAN TO REENLIST:				
NO, PLANNING TO RETIRE	8	14	5	51
NO OR PROBABLY NO	43	41	45	13
YES OR PROBABLY YES	49	45	50	36

SUMMARY OF BACKGROUND INFORMATION

Each USAF job inventory contains a background information section in which the respondent reports information about themselves and their job. When summarized, these variables can provide insight into the relationship between specialties, jobs, skill level, or experience. This information, summarized in the following paragraphs, involves specifically the method of assignment, the amount of time spent in hours performing operator or maintenance type functions, and the types of work shifts performed. These items will be discussed on the specialty level and can be used to make comparisons between specialties.

Method of Assignment to Specialty

When looking at the entry method most prevalent for each specialty, an interesting trend occurs. Table 18 presents the percent members of each specialty who entered their career ladder through seven possible avenues. As expected, a majority of the personnel in each specialty entered their respective career ladders after completing resident course classroom training. However, it was interesting to note that a substantial percentage of 303X1 personnel (16 percent) entered the career ladder after cross-training from some other specialty.

Amount of Time Spent Performing Operations and Maintenance Functions

A topic of interest which needed to be examined was the amount of time spent performing operator or maintainer type duties. This topic can be addressed using two methods. First, and most common, is to examine the relative percent time spent on the operations duty and radar maintenance duties found in the task section of the job inventory. This type of analysis can be found in the ANALYSIS OF DAFSC GROUPS section of this report. Another method that was used to assess the amount of time spent performing operator or maintainer type functions is to ask respondents how many hours per week they spend performing these functions. This type of question was included as a background item in the background section of the 303XX job inventory, and the results can be found in Tables 19 and 20.

Table 19 reveals virtually none of the 303X1 and 303X2 personnel surveyed spend any job time performing radar operations functions. However, 60 percent of 303X3 personnel report spending from one to over 35 hours per week performing operator type functions. This is to be expected since most 303X3 personnel are responsible for both operating and maintaining Automatic Tracking Radars, while 303X1 and 303X2 personnel are only responsible for maintaining their respective radar systems.

Table 20 reveals the number of hours spent performing maintenance type duties, and reveals some interesting tends. Overall, a majority of the personnel in each specialty spent at least 10 hours per week performing radar maintenance duties. As expected, due to the operational responsibilities and

TABLE 18

METHOD OF ASSIGNMENT TO SPECIALTY
(PERCENT MEMBERS RESPONDING)

METHOD OF ASSIGNMENT	DAFSC 303X1	DAFSC 303X2	DAFSC 303X3
COMPLETED RESIDENT TECHNICAL TRAINING	68	82	78
RECLASSIFIED WITHOUT TECHNICAL TRAINING OR OJT	*	*	*
DIRECT DUTY ASSIGNMENT (DDA) WITHOUT BYPASS TEST	*	*	2
DIRECT DUTY ASSIGNMENT WITH BYPASS TEST	*	*	*
CONVERTED FROM ANOTHER AFS	*	*	1
RETRAINED FROM ANOTHER AFS	16	5	7
REENLISTED AFTER PRIOR SERVICE	5	6	6
NO REPLY	8	5	5

* DENOTES LESS THAN ONE PERCENT

TABLE 19

NUMBERS OF HOURS SPENT PER WEEK PERFORMING OPERATOR TYPE DUTIES
(PERCENT MEMBERS RESPONDING)

NUMBER OF OPERATOR HOURS SPENT PER WEEK	DAFSC 303X1	DAFSC 303X2	DAFSC 303X3
NONE	86	90	40
1-5 HOURS	6	5	10
6-10 HOURS	2	*	6
11-15 HOURS	*	*	5
16-20 HOURS	*	*	10
21-25 HOURS	*	*	8
26-30 HOURS	*	*	6
31-35 HOURS	*	*	5
OVER 35 HOURS	2	1	10

* DENOTES LESS THAN ONE PERCENT

TABLE 20

NUMBER OF HOURS PER WEEK SPENT PERFORMING MAINTENANCE TYPE DUTIES
(PERCENT MEMBERS RESPONDING)

NUMBER OF MAINTENANCE HOURS SPENT PER WEEK	DAFSC 303X1	DAFSC 303X2	DAFSC 303X3
NONE	18	32	29
1-5 HOURS	4	9	11
6-10 HOURS	4	8	11
11-15 HOURS	4	5	8
16-20 HOURS	7	8	11
21-25 HOURS	6	5	8
26-30 HOURS	7	4	5
31-35 HOURS	7	5	3
OVER 35 HOURS	38	17	11

the number of primarily operator oriented jobs performed by 303X3 personnel, a substantial percentage of 303X3 personnel (29 percent) report not spending any time performing maintenance duties. However, a slightly higher percentage of 303X2 personnel also report spending no time performing maintenance duties. This is probably due to the relatively high percentages of 303X2 personnel found in the Job Control Personnel, Quality Control Personnel and related non-maintenance clusters identified in the CAREER LADDER STRUCTURE section of this report.

Work Shift

Table 21 provides eight of the most common work shifts found with the three specialties, and also highlights several interesting trends. DAFSC 303X1 personnel are somewhat unique because 24 percent work a rotating eight hour shift. This is to be expected, since most Air Force bases are open for air traffic 24 hours a day, seven days a week. Table 21 also reveals 55 percent of 303X2 personnel are working a day shift, which is a somewhat higher percentage than the percentage of 303X1 or 303X3 personnel who work the same shift. The reason for this trend may be the same reason why a high percentage of 303X2 personnel did not spend time performing maintenance duties. That is, many 303X2 personnel can be found in job groups (identified in the CAREER LADDER STRUCTURE section) which almost exclusively work a day shift. Finally a fairly high percentage of 303X3 personnel work a variable shift, due to the varying RBS and ECM missions provided for SAC bomber crews, and to the extensive tactical ECM missions performed by TAC personnel at various Air Force locations.

TABLE 21

TYPES OF WORK SHIFTS PERFORMED BY SPECIALTY

WORK SHIFT	DAFSC 303X1	DAFSC 303X2	DAFSC 303X3
DAY	41	55	33
SWING	2	2	3
MID	*	*	*
12 HOUR DAY	*	1	6
12 HOUR NIGHT	*	*	*
ROTATING 8 HOUR	24	17	10
ROTATING 12 HOUR	7	4	3
VARIABLE	14	13	27
OTHER	7	4	14

* DENOTES LESS THAN ONE PERCENT

TRAINING ANALYSIS

A primary reason for initiating this report was to explore the possibility of merging the 303X1, 303X2, and 303X3 career ladders. If this proposed merger takes place (this report recommends keeping the ladders separate), the impact on resident classroom training would cause some substantial training changes. The three 3ABR courses for the three career ladders would probably be combined into one fairly lengthy course, with graduates being assigned to ATC, AC and W, or ATR locations. Although the merger may be attractive to some in terms of training dollars, the effectiveness of the new graduates out in the field would be questionable. The findings of the CAREER LADDER STRUCTURE section suggest these three types of radar systems are fairly distinct and different from each other, with very few 303X1 personnel maintaining 303X2 or 303X3 radars, etc. It would probably be fairly difficult to come up with a reasonable length resident course that would train first enlistment personnel to the same degree of effectiveness as current 303X1, 303X2, and 303X3 resident training. Even though the findings of this study do not support a merger of the 303X1, 303X2, and 303X3 career ladders, several aspects of training across the three ladders make for an interesting analysis. Analyses discussed below include the relative difficulty of tasks in the job inventory and the types of test and radar equipment maintained by 303X1, 303X2, and 303X3 first enlistment personnel.

(Training documents pertaining to the 303X1, 303X2, and 303X3 career ladder are not discussed in this section. Instead, analyses pertaining to AFR 39-1 Specialty Descriptions, Specialty Training Standards, and the Plans of Instruction for the basic resident courses can be found in the separate reports concerning the three career ladders (AFPT 90-303-400, Volumes II, III, and IV).)

Task Difficulty

The relative difficulty of each task in the job inventory was assessed through the ratings of 135 experienced 7- and 9-skill level Air Traffic Control Radar, Aircraft Control and Warning Radar, and Automatic Tracking Radar NCOs. These tasks were processed to produce an ordered listing of all tasks in terms of their relative difficulty and were standardized to have an average difficulty of 5.0 (standard deviation equals 1.0). (For a more complete description of these ratings, see the Task Factor Administration section in the INTRODUCTION.)

Table 22 provides some background information about the 135 task difficulty raters described above. This table reveals approximately equal percentages of DAFSC 303X1, 303X2, and 303X3 personnel and a somewhat smaller percentage of DAFSC 30399 personnel participated in the task difficulty ratings. Having fairly equal percentages of the personnel from all three ladders is important, since this reduces the chances of ratings being biased for any one career ladder. Table 22 also reveals the major command distribution for both the percentage of personnel assigned to each career ladder and the percent of task difficulty raters assigned to each major command. Overall, a very representative major command sample was obtained, with similar percentages of the personnel assigned and the task difficulty raters utilized being noted.

Table 23 lists those tasks rated the most difficult by DAFSC 303X1, 303X2, 303X3, and 30399 task difficulty raters. All of the tasks are maintenance oriented, and many involve analog or digital types of equipment. Tasks typically rated the most difficult include isolating digital height computer and evaluation system malfunctions, isolating analog MTI receiver malfunctions, isolating analog to digital converter malfunctions, and isolating IFF/SIF IDP malfunctions. Overall, none of these tasks are performed by more than 20 percent of the total 303XX combined sample, but many of the more difficult MTI and TV camera tasks listed are performed by more than 20 percent of the total 303X1 sample.

Most of the tasks rated average in difficulty are also maintenance oriented, but involving adjusting, removing, or replacing assemblies rather than the isolating malfunctions of the various assemblies (see Table 24). Some of these tasks include adjusting B scan indicators, replacing gears or gear train assemblies, aligning indicator video mixers, and performing soldering on circuit boards. Generally, a greater percentage of personnel from all three ladders perform tasks of average difficulty than tasks rated the most difficult.

Table 25 lists the tasks rated the least difficult by senior 303XX personnel. Generally, these tasks involve various aspects of routine radar or general maintenance, such as performing area beautification, cleaning air or moisture filters, removing fuses or fuse holders, or painting or remodeling rooms. As expected, fairly large percentages of 303X1, 303X2, and 303X3 personnel can be found performing these relatively easy tasks.

Test and Radar Equipment

Table 26 lists 25 common types of radar equipment maintained by 303X1, 303X2, and 303X3 first enlistment personnel. This table can reveal if any types of radars or associated equipment are maintained by similar percentages of 303X1, 303X2, or 303X3 first enlistment personnel. Resident course training could possibly be consolidated if the same types of radars are maintained. However, an examination of Table 26 reveals none of the 25 types of equipment are maintained by high percentages of first enlistment personnel from all three career ladders. Only one piece of equipment, the AN/UPM-137, was maintained by high percentages of first enlistment personnel from two of the career ladders.

Table 27 lists 20 of the most common types of test equipment utilized by first enlistment personnel from all three career ladders. Several types of test equipment are utilized by at least 20 percent of 303X1, 303X2, and 303X3 first enlistment personnel, and include couplers, high voltage probes, meg-ohm meters, and transistor testers. However, several types of test equipment were somewhat unique for first enlistment personnel in two of the career ladders. Dial indicators, flux meters, pace kits, and synchro standards appear to be utilized by substantially higher percentages of 303X1 first enlistment personnel. Couplers, impedance bridges, insulation breakdown testers, and transits are utilized by somewhat higher percentages of 303X2 first enlistment personnel.

Summary

In light of the differences in the technical jobs performed by the personnel in the three ladders, a merger does not appear feasible at this time. If the merger takes place, the training community would be faced with an almost impossible task of combining the three basic resident courses into one consolidated course. The chances of first enlistment personnel being trained in a common course to be as effective on the job as they are with three separate courses appears low, since none of the radars or radar equipment are maintained by substantial percentages of personnel from all three career ladders.

TABLE 22

MAJOR COMMAND REPRESENTATION OF 303X1, 303X2, AND 303X3 TASK DIFFICULTY RATERS
(N=135)

	303X1		303X2		303X3		30399	
MAJOR COMMAND	PERCENT OF ASSIGNED	PERCENT OF TASK DIFFICULTY RATERS	PERCENT OF ASSIGNED	PERCENT OF TASK DIFFICULTY RATERS	PERCENT OF ASSIGNED	PERCENT OF TASK DIFFICULTY RATERS	PERCENT OF ASSIGNED	PERCENT OF TASK DIFFICULTY RATERS
AFCC	92	93	13	10	1	5	28	22
ATC	5	5	4	10	3	*	3	6
SAC	*	*	*	2	50	49	10	*
TAC	*	*	58	53	28	19	35	56
USAFE	*	*	17	10	2	3	6	*
PACAF	*	*	3	3	4	3	3	11
AFSC	*	*	2	*	3	11	6	*
AAC	*	*	*	5	1	*	3	5
OTHER	3	2	3	7	8	10	6	*
TOTAL	100	100	100	100	100	100	100	100

TOTAL NUMBER OF TASK DIFFICULTY RATERS - 135

TOTAL NUMBER OF 303X1 TASK DIFFICULTY RATERS - 40
PERCENT OF 303X1 RATERS IN TOTAL TASK DIFFICULTY SAMPLE - 30%

TOTAL NUMBER OF 303X2 TASK DIFFICULTY RATERS - 40
PERCENT OF 303X2 RATERS IN TOTAL TASK DIFFICULTY SAMPLE - 30%

TOTAL NUMBER OF 303X3 TASK DIFFICULTY RATERS - 37
PERCENT OF 303X3 RATERS IN TOTAL TASK DIFFICULTY SAMPLE - 27%

TOTAL NUMBER OF 30399 TASK DIFFICULTY RATERS - 18
PERCENT OF 30399 RATERS IN TOTAL TASK DIFFICULTY SAMPLE - 13%

* DENOTES LESS THAN ONE PERCENT

TABLE 23

REPRESENTATIVE TASKS RATED THE MOST DIFFICULT BY ALL 303X1, 303X2, AND 303X3 TASK DIFFICULTY RATERS

TASKS	TASK DIFFICULTY	PERCENT MEMBERS PERFORMING 303X1 (N=750)	303X2 (N=724)	303X3 (N=661)	TOTAL SAMPLE
DESIGN CIRCUITRY	8.95	*	2	2	1
ISOLATE IFF/SIF IDP MALFUNCTIONS	7.25	38	*	*	13
ISOLATE DIGITAL HEIGHT COMPUTER AND EVALUATION SYSTEM MALFUNCTIONS	7.24	*	11	1	4
ISOLATE ANALOG MTI CANCELLATION SYSTEM MALFUNCTIONS	7.05	43	13	2	19
ISOLATE DIGITAL MTI CANCELLATION SYSTEM MALFUNCTIONS	7.04	22	14	1	12
ESTABLISH HOST TENANT SUPPORT AGREEMENTS	7.01	4	3	3	4
PREPARE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	7.00	15	17	12	17
ISOLATE TRACK RANGE COMPUTER MALFUNCTIONS	7.00	2	*	20	7
ISOLATE ANALOG MTI RECEIVER MALFUNCTIONS	6.95	42	12	1	19
ISOLATE DIGITAL MTI RECEIVER MALFUNCTIONS	6.93	20	15	2	12
ISOLATE MULTIPLEXER MALFUNCTIONS	6.91	22	1	*	12
ISOLATE TV PPI UNIT MALFUNCTIONS	6.90	39	*	*	13
DEVELOP TRAINING COURSE OR CAREER DEVELOPMENT COURSE (CDC) CURRICULUM MATERIALS	6.88	3	2	2	2
ISOLATE ANALOG TO DIGITAL CONVERTER MALFUNCTIONS	6.81	39	13	6	19
ISOLATE ANTICHAFF RECEIVER MALFUNCTIONS	6.77	*	2	*	1
ISOLATE TARGET DATA COMPUTER (TDC) MALFUNCTIONS	6.77	5	*	*	2
EVALUATE BUDGETING OR FINANCIAL REQUIREMENTS	6.75	4	2	3	4
ISOLATE TV CAMERA MALFUNCTIONS	6.75	38	*	6	15
ISOLATE ECCM RECEIVER MALFUNCTIONS	6.73	*	11	*	4
ISOLATE PARAMETRIC AMPLIFIER MALFUNCTIONS	6.72	49	4	4	19
ISOLATE ANALOG VIDEO PROCESSOR OR DETECTION SYSTEM MALFUNCTIONS	6.66	25	5	1	11
INSTALL OR DISASSEMBLE LONG RANGE SEARCH RADAR SYSTEMS	6.66	*	5	*	2
INSTALL OR DISASSEMBLE FIXED SURVEILLANCE RADAR SYSTEMS	6.63	4	2	*	2

* DENOTES LESS THAN ONE PERCENT

TABLE 24

REPRESENTATIVE TASKS RATED AVERAGE IN DIFFICULTY BY ALL 303X1, 303X2, AND 303X3 TASK DIFFICULTY RATERS

TASKS	TASK DIFFICULTY	PERCENT MEMBERS PERFORMING 303X1 (N=750)	303X2 (N=724)	303X3 (N=661)	TOTAL SAMPLE
ALIGN TRIGGER DISTRIBUTION ASSEMBLIES	5.14	21	18	4	14
ADJUST TRANSMITTER COHERENT CRYSTAL OSCILLATORS	5.14	26	21	2	16
ADJUST B SCAN INDICATORS	5.12	4	1	19	7
PERFORM AIRCRAFT EMERGENCY PROCEDURES	5.11	*	*	4	2
ALIGN INDICATOR VIDEO MIXERS	5.10	47	16	9	24
INSTALL OR REMOVE RADAR SIGNAL SIMULATOR EQUIPMENT	5.07	9	4	3	5
FABRICATE TRIAXIAL CABLES	5.06	1	7	1	3
COMPILE MISSION RESULTS	5.05	*	2	11	4
REMOVE OR REPLACE GEARS OR GEAR TRAIN ASSEMBLIES	5.04	19	34	19	23
TUNE TRANSMITTER KLYSTRON POWER AMPLIFIERS	5.03	6	18	4	9
EVALUATE SAFETY PROGRAMS	5.02	11	8	6	10
PERFORM PMIs ON TRANSMITTER EQUIPMENT	5.01	69	53	49	55
REMOVE OR REPLACE ARMATURES OR FIELD WINDINGS	5.00	9	7	5	7
ALIGN ANTENNA BEAM ANGLE METERS	5.00	17	1	*	6
PERFORM PMIs ON REMOTING EQUIPMENT	4.99	52	7	5	22
DETERMINE LOCATIONS OF SHORTS OR OPENS IN CABLE RUNS	4.98	38	33	28	32
ADJUST TRANSMITTER HIGH VOLTAGE PROTECTIVE CIRCUITS	4.97	51	34	17	33
REMOVE OR REPLACE INTERNAL CHASSIS WIRING	4.96	41	34	23	31
PREPARE VEHICLES FOR SHIPMENT	4.95	6	11	4	7
EVALUATE CORROSION CONTROL PROGRAMS	5.92	12	13	11	13
ADJUST TRANSMITTER INTERMEDIATE POWER AMPLIFIERS	4.91	10	11	6	13
ADJUST ANTENNA TILT OR LIMIT SWITCHES	4.89	43	14	20	25
PERFORM SOLDERING ON CIRCUIT BOARDS	4.89	69	51	42	53
CONVERT GRID SYSTEM DATA TO AZIMUTH AND RANGE DATA	4.87	1	1	12	4
REMOVE OR REPLACE ANALOG MTI RECEIVERS	4.86	32	5	*	13

* DENOTES LESS THAN ONE PERCENT

TABLE 25

REPRESENTATIVE TASKS RATED THE LEAST DIFFICULT BY ALL 303X1, 303X2, AND 303X3 TASK DIFFICULTY RATERS

TASKS	TASK DIFFICULTY	PERCENT MEMBERS PERFORMING 303X1 (N=750)	303X2 (N=724)	303X3 (N=661)	TOTAL SAMPLE
PERFORM AREA BEAUTIFICATION	1.78	49	39	50	44
CLEAN OR REPLACE AIR OR MOISTURE FILTERS	1.84	51	47	42	45
PERFORM GENERAL HOUSEKEEPING PROCEDURES	1.90	66	56	51	56
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	2.05	74	56	57	61
LUBRICATE VAN OR TRAILER CHASSIS	2.11	20	13	27	19
RECORD BOMB AWAY TIMES	2.20	*	*	22	7
LUBRICATE MECHANICAL BEARING SURFACES	2.20	36	41	31	35
REMOVE OR REPLACE ELECTRON TUBES	2.22	68	53	44	54
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	2.46	63	39	56	52
PERFORM GENERAL FACILITY MAINTENANCE OR REPAIRS, SUCH AS PAINTING OR REMODELING ROOMS OR REPAIRING PLUMBING FIXTURES	2.58	35	34	35	34
PITCH OR STRIKE TENTS	2.68	11	19	2	11
ISSUE JOB CONTROL NUMBERS	2.77	21	19	15	18
INSTALL OR REMOVE MOUNTING BRACKETS OR FIXTURES	2.83	23	25	21	22
REMOVE OR REPLACE BULB HOLDERS	2.90	42	35	25	33
LACE WIRING ASSEMBLIES	2.94	19	33	14	21
PERFORM OPERATOR MAINTENANCE ON VEHICLES	2.99	39	23	26	29
REMOVE OR REPLACE RESISTORS	3.02	71	57	53	59
RECORD MISSION RESULTS	3.12	*	1	18	6
INSTALL OR REMOVE CRIMPED WIRING TERMINALS	3.16	35	37	30	33
REMOVE OR REPLACE CRYSTALS	3.17	62	45	43	48
ADMINISTER TESTS	3.17	10	8	10	9
PREPARE SERVICEABLE TAG - MATERIEL FORMS (DD FORM 1574)	3.18	51	33	27	37
REMOVE OR REPLACE RHEOSTATS	3.22	48	39	29	37

TABLE 26

TYPES OF RADARS AND ASSOCIATED EQUIPMENT MAINTAINED
BY FIRST ENLISTMENT PERSONNEL
(PERCENT MEMBERS MAINTAINING)

RADARS AND ASSOCIATED EQUIPMENT	FIRST ENLISTMENT PERSONNEL 303X1 (N=253)	303X2 (N=211)	303X3 (N=324)
AN/GPA-133	75	9	4
AN/GPA-[illegible]1	70	11	5
AN/FPN-16/61	55	8	5
AN/TPX-49	53	8	4
AN/TPX-42A	45	7	3
AN/TPX-42	42	7	3
OS-24/126	41	7	3
AN/FPN-47	38	7	4
AN/GPA-127	11	41	4
AN/UPX-14	8	34	3
AN/FPS-6/90	10	29	4
AN/UPX-23	8	24	3
AN/UPM-137	29	24	4
AN/UPA-62	9	24	4
AN/UPX-21	8	24	3
AN/TPS-43E	9	24	3
AN/FPS-107	9	21	4
AN/MPS-T1	8	6	28
AN/MSQ-77	8	7	25
AN/MPS-9	8	6	21
AN/UPX-6	8	9	14
AN/MSQ-2	8	6	13
AN/GPA-26	11	9	13
AN/MSQ-46	8	6	11
AN/MSQ-39	8	7	10

TABLE 27

TEST EQUIPMENT UTILIZED BY FIRST ENLISTMENT PERSONNEL
(PERCENT MEMBERS UTILIZING)

TEST EQUIPMENT	FIRST ENLISTMENT PERSONNEL 303X1 (N=253)	303X2 (N=211)	303X3 (N=324)
NONE	4	6	14
CABLE SIMULATORS	12	6	4
COUPLERS	33	50	26
DIAL INDICATORS	72	25	16
FIELD STRENGTH METERS	20	11	11
FLUX METERS	53	10	16
HIGH VOLTAGE MODULATOR DUMMIES	26	25	12
HIGH VOLTAGE PROBES	66	56	55
IMPEDANCE BRIDGES	14	27	9
INSULATION BREAKDOWN TESTERS	30	51	9
LOAD TEST SETS	13	17	8
MEG-OHM METERS	74	53	46
NOISE FIGURE METERS	50	35	18
PACE KITS	49	19	17
PRINTED CIRCUIT CARD TEST SETS	27	19	21
STANDING WAVE RATIO METERS	53	40	18
SYNCHRO STANDARDS	24	12	4
THEODOLITES	2	4	*
TRANSISTOR TESTERS	48	31	27
TRANSITS	4	19	2
OTHER	2	1	5

* DENOTES LESS THAN ONE PERCENT

ANALYSIS OF ELECTRONIC PRINCIPLES DATA

In addition to the standard job inventory, an Electronics Principles Inventory (EPI) was administered to approximately 1200 303X1, 303X2, and 303X3 incumbents. The EPI is a knowledge based job inventory which identifies the range of electronic principles personnel must understand to perform any electronics oriented job. Training managers can use EPI data in conjunction with OSR data and other information to determine precisely what specialists do and what electronic principles they employ on the job. By using EPI and OSR data in this manner, training managers satisfy an important aspect of the instructional systems development (ISD) process.

Description

The EPI differs from the usual task-oriented survey in two major respects. First, the EPI asks two general questions: "What do you do?" and "What electronic knowledge do you use in performing your job?" The usual task survey concentrates on only one question: "What do you do?" The second difference is the EPI can be administered to anyone who works with electronics. That is, it is general in nature, unlike the usual job inventory which is developed for a particular specialty or group of specialties.

The EPI has both a background and principles section. The background section is very similar to that found in standard job inventories, and is concerned with such information as DAFSC, months TAFMS, autovon extension, MAJCOM, etc. The principles section is used to assess the electronic knowledge needed to adequately perform a job. This section consists of 1,247 items under 63 subject matter areas covering all electronic principles training given at the five ATC Technical Training Centers. The EPI was developed in a cooperative project between USAFOMC and the training centers. (For more information concerning the EPI, see the USAFOMC October 1977 Technical Note "The Development and Application of the Electronic Principles Job Inventory". For more information concerning the results of the EPI with the individual 303X1, 303X2, and 303X3 career ladders, see the individual EPI reports; AFPT 90-XXX-222, February 1981.)

Table 28 lists the 63 subject matter areas in the EPI, and the percentage of first enlistment personnel utilizing each subject matter area. In addition, Table 28 highlights (by asterisks) those subject matter areas which are utilized by at least 50 percent of first enlistment personnel in all three career ladders. This is important to note since if the three ladders were merged, in all likelihood basic resident training for the three specialties would also be merged. By highlighting those subject matter areas which are utilized by at least 50 percent of the first enlistment personnel from all three ladders, training personnel can note which subject matter areas are common for all three ladders.

Table 29 shows a graphic representation of the data found in Table 28. When comparing the number of electronic areas utilized by at least 50 percent of 303X1, 303X2, or 303X3 first enlistment personnel, Table 29 reveals that

303X1 first enlistment personnel require the most extensive electronics principles knowledge to adequately perform their job. Forty-eight of the 63 subject matters areas in the EPI are utilized by at least 50 percent of 303X1 first enlistment personnel, some of the which include direct current and voltage, transistors, special purpose electron tubes, and input/output (peripheral) devices. It is interesting to note that there were no subject matter areas which were utilized by at least 50 percent of either 303X2 or 303X3 first enlistment personnel that were not also utilized by at least 50 percent of 303X1 first enlistment personnel. In other words, based on EPI data, 303X1 first enlistment personnel may be able to maintain 303X2 or 303X3 radars or associated equipment with a minimum of training, while more extensive electronics principles training would be needed by 303X2 or 303X3 first enlistment personnel if they were called to maintain 303X1 radars or associated equipment.

Tables 30, 31, and 32 provide some training criteria for each subject matter area for each specialty. Those subject matter areas which have more than 50 percent members utilizing (heavy usage subject matter areas) should probably be trained in the basic resident school. Those subject matter areas utilized by less than 30 percent of the first enlistment incumbents (low usage subject matter areas) should not be trained in the basic resident school. Moderate usage matter areas (30-50 percent members utilizing) must be looked at closely, and training personnel most determine whether these subject matter areas should be included in the basic resident school.

Table 30 reveals the heavy usage, moderate usage, and low usage subject matter areas for 303X1 first enlistment personnel. As stated earlier, 48 subject matter areas were identified as being heavily utilized by these personnel, and some of these include oscillators, coupling, television, and transmission lines. Eleven subject matter areas were identified in the low usage category and probably should not be trained. Some of these low usage subject matter areas include speakers, lasers, and FM systems. Finally, four subject matter areas fall in the moderate usage catagory, and include time constants and Boolean equations. These four areas need to be examined to determine their utility for basic resident training.

Table 31 reveals the heavy, moderate, and low usage subject matter areas for 303X2 first enlistment personnel. Thirty-six areas fell into the heavy usage catagory, some of which include pulse modulation systems, timing circuits, and relays. These subject matter areas should definitely be included in basic resident training for 303X2 personnel. Eighteen subject matter areas were identified in the low usage catagory, and probably should not be included in training for 303X2 personnel. Examples of these low usage areas include numbering systems, photo sensitive devices, and programming. Finally, nine areas were utilized by 30-50 percent of 303X2 first enlistment personnel, such as FM systems, transistor amplifiers, and schmitt triggers. Training personnel must decide if basic resident training is the most efficient and effective method of teaching these subject matter areas.

Table 32 reveals the subject matter breakdown for 303X3 first enlistment personnel, and reinforces the findings in Table 29. That is, 303X3 first enlistment personnel have the fewest number of subject matter areas (22) in the heavy usage catagory when compared to comparable 303X1 and 303X2 personnel. This relatively low number of heavy usage subject matter areas is

probably due to the fact that a substantial percentage of 303X3 first enlistment personnel are primarily radar operators, and are not as involved with electronic principles as their maintenance counterparts. Twenty-six subject matter areas are utilized by less than 30 percent of 303X3 first enlistment personnel, and probably should not be included in basic resident training. Some of these low usage subject areas include counters, AM systems, television, schmitt triggers, and registers. Finally, 14 subject matter areas need to be examined closely by training personnel to determine their appropriateness in basic resident training. Examples of these moderate usage areas include oscillators, multivibrators, and timing circuits.

Summary

Even though incumbents in all three specialties attend the same six week electronic fundamentals course, EPI data indicates that differing degrees of overall electronic knowledge can be found for the three career ladders. 303X1 first enlistment personnel seem to require the broadest levels of electronic principles knowledge, with at least 50 percent of these incumbents reporting they utilize 48 of the 63 different subject matter areas. 303X2 first enlistment personnel are next in line in terms of subject matter area utilization, with these incumbents reporting 36 areas in the heavy usage category. Finally, EPI data reveals that 303X3 personnel need the least amount of electronic fundamentals training, with these first enlistment personnel reporting only 22 subject matter areas in the heavy usage category. However, this data must by evaluated in the light that many 303X3 first enlistment personnel are radar operators, and do not utilize electronic principles to the same extent as 303X3 maintenance personnel. If only 303X3 maintenance personnel were examined, then in all probability the number of subject matter areas falling into the heavy usage catagory would probably increase.

TABLE 28

PERCENTAGE OF FIRST ENLISTMENT PERSONNEL IN THE 303X1, 303X2, AND 303X3 CAREER LADDERS USING ELECTRONIC PRINCIPLES (PERCENT MEMBERS UTILIZING)

SUBJECT AREA TITLE	FIRST ENLISTMENT PERSONNEL 303X1 (N=68)	303X2 (N=120)	303X3 (N=73)
* MATHEMATICS	91	82	66
* DIRECT CURRENT AND VOLTAGE	96	93	73
* RESISTORS/RESISTIVE CIRCUITS	76	74	52
* METER/MULTIMETER	94	88	71
* ALTERNATING CURRENT	76	64	52
* INDUCTORS/INDUCTIVE REACTANCE	82	74	56
* CAPACITORS AND CAPACITIVE	90	80	60
* TRANSFORMERS	84	75	55
MAGNETISM	88	53	48
* RCL CIRCUITS	79	68	52
TIME CONSTANTS	49	43	33
* FILTERS	85	77	51
COUPLING	84	72	49
* SOLDERING	84	82	63
* RELAYS	91	86	59
MICROPHONES AND SENSING DEVICES	19	12	23
SPEAKERS	13	7	23
* OSCILLOSCOPES	91	86	62
* SEMICONDUCTOR DIODES	88	78	53
TRANSISTORS	88	66	34
TRANSISTOR AMPLIFIERS	10	47	27
SOLID-STATE SPECIAL PURPOSE DEVICES	81	35	25
* POWER SUPPLIES	82	78	60
OSCILLATORS	84	70	49
MULTIVIBRATORS	85	65	41
LIMITERS AND CLAMPERS	75	64	33
ELECTRON TUBES	87	73	44
ELECTRON TUBE AMPLIFIERS AND CIRCUITS	85	75	34
SPECIAL PURPOSE ELECTRON TUBES	91	68	41
* HETERODYNING AND MODULATION-DE MODULATION (MODEMS)	85	74	52
AM SYSTEMS	26	20	5
FM SYSTEMS	24	33	21
NUMBERING SYSTEMS	43	13	12

* SUBJECT AREAS UTILIZED BY AT LEAST 50 PERCENT OF ALL 303XX FIRST ENLISTMENT PERSONNEL

TABLE 28 (CONTINUED)

PERCENTAGE OF FIRST ENLISTMENT PERSONNEL IN THE 303X1, 303X2, AND 303X3 CAREER LADDERS USING ELECTRONIC PRINCIPLES
(PERCENT MEMBERS UTILIZING)

SUBJECT AREA TITLE	FIRST ENLISTMENT PERSONNEL 303X1 (N=68)	303X2 (N=120)	303X3 (N=73)
LOGIC FUNCTIONS	76	26	26
BOOLEAN EQUATIONS	44	9	10
COUNTERS	71	23	29
TIMING CIRCUITS	88	69	49
* USE OF SIGNAL GENERATORS	85	81	53
* MOTORS AND GENERATORS	78	75	52
* METER MOVEMENTS	85	85	66
SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	15	30	15
WAVESHAPING CIRCUITS	87	77	44
SINGLE OR INDEPENDENT SIDEBAND SYSTEMS	10	15	4
PULSE MODULATION SYSTEMS	71	63	41
* ANTENNAS	93	76	56
TRANSMISSION LINES	57	38	22
* WAVEGUIDES AND CAVITY RESONATORS	84	71	56
* MICROWAVE AMPLIFIERS AND OSCILLATORS	87	66	53
REGISTERS	76	21	18
STORAGE DEVICES	71	30	11
DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS	81	14	12
PHANTASTRONS	51	19	29
SCHMITT TRIGGERS	84	37	19
CABLE FABRICATION	53	65	37
INPUT/OUTPUT (PERIPHERAL) DEVICES	50	34	27
PHOTO SENSITIVE DEVICES	57	17	14
SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	31	24	26
INFRARED SYSTEMS	-	2	1
LASERS	1	2	-
DISPLAY TUBES	4	2	3
TELEVISION	62	2	4
PROGRAMMING	9	5	8
* DB AND POWER RATIOS	87	82	55

* SUBJECT AREAS UTILIZED BY AT LEAST 50 PERCENT OF ALL 303XX FIRST ENLISTMENT PERSONNEL

TABLE 29

NUMBER OF ELECTRONIC FUNDAMENTALS SUBJECT AREAS UTILIZED BY
AT LEAST FIFTY PERCENT OF 303X1, 303X2, OR 303X3 FIRST ENLISTMENT PERSONNEL

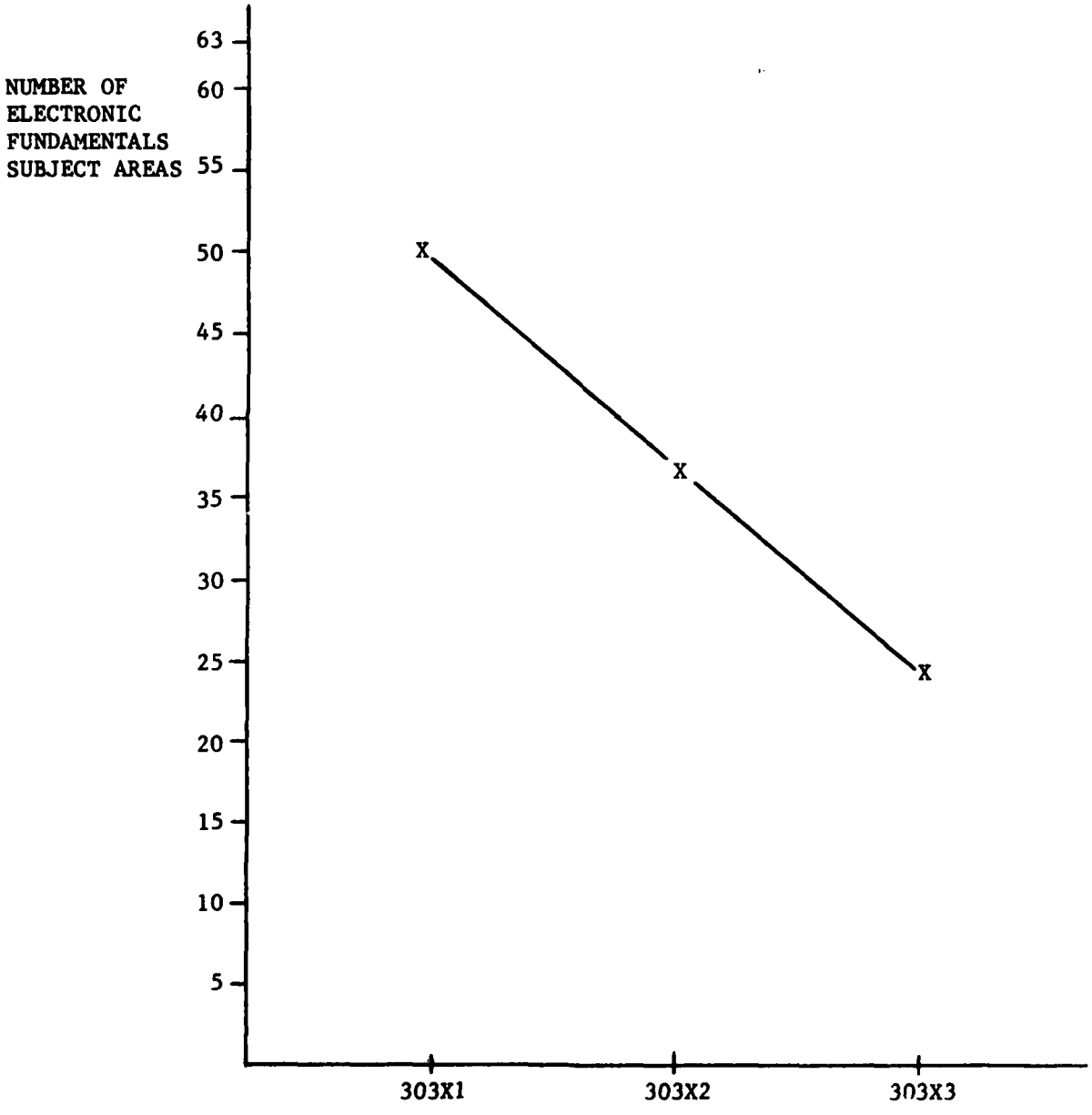

TABLE 30

CATEGORIZATION OF ELECTRONIC FUNDAMENTAL SUBJECT AREAS UTILIZED BY 303X1 FIRST ENLISTMENT PERSONNEL

HEAVY USAGE SUBJECT MATTER AREAS (50 PERCENT OR MORE)

MATHEMATICS
DIRECT CURRENT AND VOLTAGE
RESISTORS/RESISTIVE CIRCUITS
METER/MULTIMETER
ALTERNATING CURRENT
INDUCTORS/INDUCTIVE REACTANCE
CAPACITORS AND CAPACITIVE
TRANSFORMERS
MAGNETISM
RCL CIRCUITS
FILTERS
COUPLING
SOLDERING
RELAYS
OSCILLOSCOPES
SEMICONDUCTOR DIODES
TRANSISTORS
SOLID STATE SPECIAL PURPOSE DEVICES
POWER SUPPLIES
OSCILLATORS
MULTIVIBRATORS
LIMITERS AND CLAMPERS
ELECTRON TUBES
ELECTRON TUBE AMPLIFIERS AND CIRCUITS
SPECIAL PURPOSE ELECTRON TUBES
HETERODYNING AND MODULATION DE-MODULATION (MODEMs)
LOGIC FUNCTIONS
COUNTERS
TIMING CIRCUITS
USE OF SIGNAL GENERATORS
METER MOVEMENTS
WAVESHAPING CIRCUITS
PULSE MODULATION SYSTEMS
ANTENNAS
TRANSMISSION LINES
WAVEGUIDES AND CAVITY RESONATORS
MICROWAVE AMPLIFIERS AND OSCILLATORS
REGISTERS
STORAGE DEVICES
DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS
PHANTASTRONS
SCHMITT TRIGGERS
CABLE FABRICATION
INPUT/OUTPUT (PERIPHERAL) DEVICES
PHOTO SENSITIVE DEVICES
TELEVISION
DB AND POWER RATIOS

MODERATE USAGE SUBJECT MATTER AREAS (30 TO 50 PERCENT)

TIME CONSTANTS
NUMBERING SYSTEMS
BOOLEAN EQUATIONS
SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)

LOW USAGE SUBJECT MATTER AREAS (LESS THAN 30 PERCENT)

MICROPHONES AND SENSING DEVICES
SPEAKERS
TRANSISTOR AMPLIFIERS
AM SYSTEMS
FM SYSTEMS
SATURABLE REACTORS AND MAGNETIC AMPLIFIERS
SINGLE OR INDEPENDENT SIDEBANDS SYSTEMS
INFRARED SYSTEMS
LASERS
DISPLAY TUBES
PROGRAMMING

TABLE 31

CATEGORIZATION OF ELECTRONIC FUNDAMENTAL SUBJECT AREAS UTILIZED BY 303X2 FIRST ENLISTMENT PERSONNEL

HEAVY USAGE SUBJECT AREAS (50 PERCENT OR MORE)

MATHEMATICS
DIRECT CURRENT OR VOLTAGE
RESISTORS/RESISTIVE CIRCUITS
METER/MULTIMETER
ALTERNATING CURRENT
INDUCTORS/INDUCTIVE REACTANCE
CAPACITORS AND CAPACITIVE
TRANSFORMERS
MAGNETISM
RCL CIRCUITS
FILTERS
COUPLING
SOLDERING
RELAYS
OSCILLOSCOPES
SEMICONDUCTOR DIODES
TRANSISTORS
POWER SUPPLIES
OSCILLATORS
MULTIVIBRATORS
LIMITERS AND CLAMPERS
ELECTRON TUBES
ELECTRON TUBE AMPLIFIERS AND CIRCUITS
HETERODYNING AND MODULATION DE-MODULATION (MODEMs)
TIMING CIRCUITS
USE OF SIGNAL GENERATORS
MOTORS AND GENERATORS
METER MOVEMENTS
WAVESHAPING CIRCUITS
PULSE MODULATION SYSTEMS
ANTENNAS
WAVEGUIDES AND CAVITY RESONATORS
MICROWAVE AMPLIFIERS AND OSCILLATORS
CABLE FABRICATION
DB AND POWER RATIOS

MODERATE USAGE SUBJECT AREAS (30 TO 50 PERCENT)

TIME CONSTANTS
TRANSISTOR AMPLIFIERS
SOLID STATE SPECIAL PURPOSE DEVICES
FM SYSTEMS
SATURABLE REACTORS AND MAGNETIC AMPLIFIERS
TRANSMISSION LINES
STORAGE DEVICES
SCHMITT TRIGGERS
INPUT/OUTPUT (PERIPHERAL) DEVICES

LOW USAGE SUBJECT AREAS (LESS THAN 30 PERCENT)

MICROPHONES AND SENSING DEVICES
SPEAKERS
AM SYSTEMS
NUMBERING SYSTEMS
LOGIC FUNCTIONS
BOOLEAN EQUATIONS
COUNTERS
SINGLE OR INDEPENDENT SIDEBAND SYSTEMS
REGISTERS
DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS
PHANTASTRONS
PHOTO SENSITIVE DEVICES
SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
INFRARED SYSTEMS
LASERS
DISPLAY TUBES
TELEVISION
PROGRAMMING

TABLE 32

CATEGORIZATION OR ELECTRONIC FUNDAMENTAL SUBJECT AREAS UTILIZED BY 303X3 FIRST ENLISTMENT PERSONNEL

HEAVY USAGE SUBJECT AREAS (50 PERCENT OR MORE)

MATHEMATICS
DIRECT CURRENT AND VOLTAGE
RESISTORS/RESISTIVE CIRCUITS
METER/MULTIMETER
ALTERNATING CURRENT
INDUCTORS/INDUCTIVE REACTANCE
CAPACITORS AND CAPACITIVE
TRANSFORMERS
RCL CIRCUITS
FILTERS
SOLDERING
RELAYS
OSCILLATORS
SEMICONDUCTOR DIODES
POWER SUPPLIES
HETERODYNING AND MODULATION DE-MODULATION (MODEMs)
USE OF SIGNAL GENERATORS
METER MOVEMENTS
ANTENNAS
WAVEGUIDES AND CAVITY RESONATORS
MICROWAVE AMPLIFIERS AND OSCILLATORS
DB AND POWER RATIOS

MODERATE USAGE SUBJECT AREAS (30-50 PERCENT)

MAGNETISM
TIME CONSTANTS
COUPLING
TRANSISTORS
OSCILLATORS
MULTIVIBRATORS
LIMITERS AND CLAMPERS
ELECTRON TUBES
TIMING CIRCUITS
WAVESHAPING CIRCUITS
PULSE MODULATION SYSTEMS
CABLE FABRICATION
SPECIAL PURPOSE ELECTRON TUBES
ELECTRON TUBE AMPLIFIERS AND CIRCUITS

LOW USAGE SUBJECT AREAS (LESS THAN 30 PERCENT)

MICROPHONES AND SENSING DEVICES
SPEAKERS
TRANSISTOR AMPLIFIERS
SOLID-STATE SPECIAL PURPOSE DEVICES
AM SYSTEMS
FM SYSTEMS
NUMBERING SYSTEMS
LOGIC FUNCTIONS
BOOLEAN EQUATIONS
COUNTERS
SATURABLE REACTORS AND MAGNETIC AMPLIFIERS
SINGLE OR INDEPENDENT SIDEBAND SYSTEMS
TRANSMISSION LINES
REGISTERS
STORAGE DEVICES
DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS
PHANTASTRONS
SCHMITT TRIGGERS
INPUT/OUTPUT (PERIPHERAL) DEVICES
PHOTO SENSITIVE DEVICES
SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
INFRARED SYSTEMS
LASERS
DISPLAY TUBES
TELEVISION
PROGRAMMING

IMPLICATIONS

An examination of the tasks and jobs performed by 303X1, 303X2, and 303X3 personnel reveals a wide variety of jobs are performed. Several major jobs, especially those involving supervision, training, or administration, such as Job Control Personnel or Resident Course Instructors, were noted as being performed by roughly equal percentages of personnel from all three career ladders. However, those jobs which primarily involved radar maintenance, such as ATC Radar Maintenance Personnel or Automatic Tracking Radar Personnel, were performed almost exclusively by personnel in only one career ladder. In other words, very few 303X1 or 303X2 personnel were identified as performing a job involving automatic tracking radar equipment, etc. Based on these results, a merger of these three career ladders does not appear feasible at this time.

When examining the tasks performed and background information for the personnel in the three ladders, some interesting trends can be noted. General radar maintenance tasks, such as removing or replacing antennas, performing PMIs on transmitters, and adjusting voltage regulators are performed by fairly high percentages of personnel from all three specialties. However, many tasks were also identified as being specialty exclusive, in the fact that a fairly large number of tasks were performed by substantial percentages of personnel from only one of the three specialties. In addition, very few types of equipment were maintained by substantial percentages of personnel from the three career ladders. Again, these findings indicate that a merger of these three specialties would not be feasible at this time.

Both EPI and task data indicate that 303X1 personnel perform the broadest job and utilize the largest number of electronic principles. This information also reveals that 303X3 personnel perform the narrowest type of job and utilize the lowest number of electronics principles. Based on this data, the philosophy of sending new incumbents from all three ladders to the same length electronic fundamentals course may need to be reexamined.

Finally, it is important to note that job satisfaction varies greatly between the three specialties, with 303X1 personnel appearing to be the most satisfied while 303X3 personnel report being the least satisfied. The low job satisfaction indicators for 303X3 personnel are probably due to a number of factors, some of which may include the operator function and relatively low number of tasks these incumbents perform, the overall low experience level of the specialty (49 percent in their first enlistment), and the operating locations of many automatic tracking radar facilities. Managers in the 303X3 specialty need to be aware of these factors and try and find ways to improve upon them.

APPENDIX A

TABLE I

REPRESENTATIVE TASKS PERFORMED BY ATC RADAR MAINT. PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=529)
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	96
PERFORM PMIs ON TRANSMITTER EQUIPMENT	94
PERFORM PMIs ON RECEIVER EQUIPMENT	93
PERFORM PMIs ON ANTENNA EQUIPMENT	92
REMOVE OR REPLACE SEMICONDUCTOR DEVICES	92
ADJUST POWER SUPPLIES OTHER THAN TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	92
PERFORM SOLDERING ON CIRCUIT BOARDS	91
ALIGN AUTOMATIC FREQUENCY CONTROL (AFC) CIRCUITS	88
ADJUST VOLTAGE REGULATORS	88
REMOVE OR REPLACE CRYSTALS	86
PERFORM PMIs ON DISPLAY EQUIPMENT	85
PERFORM PMIs ON IFF/SIF EQUIPMENT	84
ADJUST VIDEO AMPLIFIERS	84
ALIGN INDICATOR SWEEP GENERATORS	83
TUNE MAGNETRON TRANSMITTERS	83
PERFORM PMIs ON TIMING EQUIPMENT	81
ALIGN PRECISION MAGNETRON TRANSMITTERS	79
ALIGN PRECISION MAP GENERATORS	79
ADJUST PARAMETRIC AMPLIFIERS	78
ALIGN RECEIVER LOCAL OSCILLATORS	78
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	78
ALIGN PRECISION SWEEP GENERATORS	78
REMOVE OR REPLACE PRECISION MAP GENERATORS	77
ISOLATE AFC CIRCUIT MALFUNCTIONS	76
ALIGN PRECISION COMPOSITE VIDEO GENERATORS	76
REMOVE OR REPLACE PRECISION SWEEP GENERATORS	76
ALIGN ANGLE VOLTAGE GENERATORS	76
ISOLATE PRECISION MAP GENERATOR MALFUNCTIONS	76
ALIGN ANALOG MOVING TARGET INDICATOR (MTI) RECEIVERS	76
LUBRICATE ANTENNA DRIVE SYSTEMS	76
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FROM 349)	75

TABLE II

REPRESENTATIVE TASKS PERFORMED BY AC & W RADAR MAINT. PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=293)
REMOVE OR REPLACE RESISTORS	98
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	95
PERFORM PMIs ON TRANSMITTER EQUIPMENT	95
REMOVE OR REPLACE RELAYS	95
PERFORM PMIs ON ANTENNA EQUIPMENT	94
REMOVE OR REPLACE SEMICONDUCTOR DEVICES	91
PERFORM PMIs ON RECEIVER EQUIPMENT	91
PERFORM SOLDERING ON CIRCUIT BOARDS	88
LUBRICATE ANTENNA DRIVE SYSTEMS	87
PERFORM CORROSION CONTROL ON ANTENNA PEDESTALS OR TOWERS	85
CLEAN OR REPLACE AIR OR MOISTURE FILTERS	84
PERFORM CORROSION CONTROL ON EQUIPMENT CABINETS OR RACKS	84
ISOLATE POWER SUPPLY MALFUNCTIONS OTHER THAN TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	78
CHECK TRANSMITTER PULSE TRANSFORMER OIL	78
ADJUST VOLTAGE REGULATORS	77
ADJUST WAVEGUIDE PRESSURIZER/DEHYDRATOR SYSTEMS	77
PERFORM POWER SUPPLY OPERATIONAL CHECKS	77
LUBRICATE MECHANICAL BEARING SURFACES	76
REMOVE OR REPLACE RHEOSTATS	75
PERFORM PMIs ON DISPLAY EQUIPMENT	75
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	73
PERFORM PREVENTIVE MAINTENANCE INSPECTIONS (PMIs) ON ANCILLARY EQUIPMENT	72
ISOLATE WAVEGUIDE PRESSURIZER/DEHYDRATOR SYSTEM MALFUNCTIONS	71
INTERPRET PLANS, DIAGRAMS, OR SCHEMATICS	71
CONSTRUCT TEST CABLES OR TEST PLUGS	70
REMOVE OR REPLACE ELECTRICAL MOTORS OR GENERATORS	69
PERFORM OPERATIONAL CHECKS OF TRANSMITTERS	67
REMOVE OR REPLACE WAVEGUIDE SECTIONS	67
PREPARE SUPPLY ISSUE/TURN-IN REQUESTS FORMS (AF FORM 2005)	67
PERFORM PMIs ON IFF/SIF EQUIPMENT	67
BLEED WAVEGUIDE PRESSURIZER/DEHYDRATOR SYSTEMS	67

TABLE III

REPRESENTATIVE TASKS PERFORMED BY ATR PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=273)
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	96
REMOVE OR REPLACE CAPACITORS	89
PERFORM PMIs ON TRANSMITTER EQUIPMENT	87
PERFORM PMIs ON ANTENNA EQUIPMENT	87
ADJUST POWER SUPPLIES OTHER THAN TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	87
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	86
PERFORM GENERAL HOUSEKEEPING PROCEDURES	83
PERFORM CORROSION CONTROL ON ANTENNA PEDESTALS OR TOWERS	83
PERFORM PMIs ON RECEIVER EQUIPMENT	81
PERFORM TRANSMITTER RUNUP PROCEDURES	79
PERFORM CORROSION CONTROL ON EQUIPMENT VANS OR TRAILERS	79
ALIGN AUTOMATIC FREQUENCY CONTROL (AFC) CIRCUITS	75
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	75
LUBRICATE ANTENNA DRIVE SYSTEMS	74
PERFORM SYSTEM RUN DOWN PROCEDURES	73
PERFORM PMIs ON RANGE AND ANGLE TRACK EQUIPMENT	71
ADJUST TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	71
REMOVE OR REPLACE CATHODE-RAY TUBES	71
INTERPRET PLANS, DIAGRAMS, OR SCHEMATICS	70
LEVEL ANTENNA PEDESTALS	70
PERFORM AUTOMATIC GAIN CONTROL CHECKS	69
REMOVE OR REPLACE ELECTRICAL MOTORS OR GENERATORS	69
PERFORM OPERATIONAL CHECKS OF AZIMUTH, ELEVATION, OR RANGE AUTOMATIC TRACKING CIRCUITS	68
PERFORM PMIs ON DISPLAY EQUIPMENT	66
PERFORM OPERATIONAL CHECKS OF TRANSMITTER	65
PERFORM AUTOMATIC FREQUENCY CONTROL CHECKS	63
BORESIGHT ANTENNAS	60
PERFORM AIRCRAFT AUTOMATIC TRACKING PROCEDURES	57
ALIGN ANTENNA SERVO DRIVE SYSTEMS	56
ALIGN RECEIVER LOCAL OSCILLATORS	53
ADJUST TRACK RANGE COMPUTERS	52

TABLE IV

REPRESENTATIVE TASKS PERFORMED BY PRECISION APPROACH RADAR REPAIRMEN

TASKS	PERCENT MEMBERS PERFORMING (N=13)
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	100
REMOVE OR REPLACE RELAYS	100
REMOVE OR REPLACE ELECTRON TUBES	92
PERFORM PMIs ON RECEIVER EQUIPMENT	92
REMOVE OR REPLACE RESISTORS	85
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	85
PERFORM SOLDERING ON CIRCUIT BOARDS	77
ALIGN AUTOMATIC FREQUENCY CONTROL (AFC) CIRCUITS	77
ADJUST VOLTAGE REGULATORS	69
ADJUST TRANSMITTER STABLE LOCAL OSCILLATORS (STALO)	54
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	54
CLEAN OR REPLACE AIR OR MOISTURE FILTERS	54
PERFORM PMIs ON DISPLAY EQUIPMENT	54
PERFORM PMIs ON ANTENNA EQUIPMENT	54
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	46
PERFORM PMIs ON REMOTING EQUIPMENT	46
ADJUST TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	46
PERFORM AUTOMATIC FREQUENCY CONTROL CHECKS	46
PERFORM POWER SUPPLY OPERATIONAL CHECKS	46
ADJUST VIDEO AMPLIFIERS	46
REMOVE OR REPLACE TRANSFORMERS	46
ALIGN PRECISION MAP GENERATORS	38
REMOVE OR REPLACE PRECISION MAP GENERATORS	38
PERFORM PMIs ON TIMING EQUIPMENT	38
PERFORM OPERATIONAL CHECKS OF TRANSMITTERS	38
REMOVE OR REPLACE PRECISION COMPOSITE VIDEO GENERATORS	38
ADJUST STAGGER PRF SYSTEMS	38
ALIGN PRECISION MAGNETRON TRANSMITTERS	31
ALIGN ANGLE VOLTAGE GENERATORS	31
INTERPRET PLANS, DIAGRAMS, OR SCHEMATICS	31
PERFORM OPERATIONAL CHECKS OF IFF/SIF RADAR SYSTEMS	31

TABLE V

REPRESENTATIVE TASKS PERFORMED BY JUNIOR AC & W RADAR MAINT. PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=50)
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	94
REMOVE OR REPLACE ELECTRON TUBES	92
PERFORM PMIs ON TRANSMITTER EQUIPMENT	90
PERFORM PMIs ON RECEIVER EQUIPMENT	78
LUBRICATE ANTENNA DRIVE SYSTEMS	76
PERFORM PMIs ON ANTENNA EQUIPMENT	68
CLEAN OR REPLACE AIR OR MOISTURE FILTERS	64
REMOVE OR REPLACE CAPACITORS	62
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	60
PERFORM POWER SUPPLY OPERATIONAL CHECKS	56
PERFORM CORROSION CONTROL ON EQUIPMENT CABINETS OR RACKS	56
PERFORM PMIs ON DISPLAY EQUIPMENT	56
PERFORM AREA BEAUTIFICATION	54
PERFORM CORROSION CONTROL ON ANTENNA PEDESTALS OR TOWERS	54
ADJUST WAVEGUIDE PRESSURIZER/DEHYDRATOR SYSTEMS	54
PERFORM SOLDERING ON CIRCUIT BOARDS	52
LUBRICATE MECHANICAL BEARING SURFACES	52
PREPARE REPARABLE ITEM PROCESSING TAG FORMS (AFTO FORM 350)	50
REMOVE OR REPLACE TRANSFORMERS	50
ALIGN RHIS	48
ADJUST TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	48
INSTALL OR REMOVE CRIMPED WIRING TERMINALS	48
CONSTRUCT TEST CABLES OR TEST PLUGS	44
ADJUST AZIMUTH BLANKERS	42
CHECK TRANSMITTER PULSE TRANSFORMER OIL	40
REMOVE OR REPLACE MOTOR OR GENERATOR BRUSHES	40
PERFORM OPERATIONAL CHECKS OF TRANSMITTERS	38
PERFORM GENERAL FACILITY MAINTENANCE OR REPAIRS, SUCH AS PAINTING OR REMODELING ROOMS OR REPAIRING PLUMBING FIXTURES	38
BLEED WAVEGUIDE PRESSURIZER/DEHYDRATOR SYSTEMS	36
REMOVE OR REPLACE GEARS OR GEAR TRAIN ASSEMBLIES	34
INTERPRET PLANS, DIAGRAMS, OR SCHEMATICS	32
PERFORM PMIs ON IFF/SIF EQUIPMENT	32

TABLE VI

REPRESENTATIVE TASKS PERFORMED BY ANCILLARY MAINTENANCE PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=10)
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	100
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	100
ALIGN VIDEO MAPPER SWEEP GENERATORS	100
ALIGN INDICATOR DEFLECTION AMPLIFIERS	100
ALIGN INDICATOR RANGE MARK GENERATORS	100
ALIGN VIDEO MAPPER DEFLECTION AMPLIFIERS	100
ALIGN VIDEO MAPPERS	100
REMOVE OR REPLACE RESISTORS	100
ALIGN INDICATOR SWEEP GENERATORS	100
ALIGN INDICATOR DEFLECTION COILS	100
REMOVE OR REPLACE CATHODE-RAY TUBES	100
ALIGN INDICATOR FOCUS COILS	100
REMOVE OR REPLACE ELECTRON TUBES	90
PERFORM AREA BEAUTIFICATION	90
PERFORM SOLDERING ON CIRCUIT BOARDS	90
ALIGN VIDEO MAPPER VIDEO BIAS FOCUS CIRCUITRY	90
ALIGN VIDEO MAPPER SYNCHRONIZING CIRCUITRY	90
ALIGN INDICATOR CURSOR GENERATORS	90
ISOLATE VIDEO MAPPER SWEEP GENERATOR MALFUNCTIONS	90
REMOVE OR REPLACE RELAYS	90
ALIGN INDICATOR VIDEO MIXERS	90
REMOVE OR REPLACE SWITCHES	90
REMOVE OR REPLACE INDICATOR SWEEP GENERATORS	90
REMOVE OR REPLACE CAPACITORS	90
ALIGN PRECISION MAP GENERATORS	80
ALIGN INDICATOR SERVO AMPLIFIERS	80
ALIGN VIDEO MAPPER INTENSITY CUTOFF CIRCUITRY	80
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	80
ISOLATE VIDEO MAPPER VIDEO BIAS FOCUS CIRCUITRY MALFUNCTIONS	80
REMOVE OR REPLACE VIDEO MAPPER DEFLECTON AMPLIFIERS	80
REMOVE OR REPLACE SEMICONDUCTOR DEVICES	80
ISOLATE INDICATOR SWEEP GENERATOR MALFUNCTIONS	80
REMOVE OR REPLACE INDICATOR RANGE MARK GENERATORS	80
REMOVE OR REPLACE INDICATOR VIDEO MIXER SUBASSEMBLIES	80
REMOVE OR REPLACE TRANSFORMERS	80

TABLE VII

REPRESENTATIVE TASKS PERFORMED BY TACTICAL RADAR CREW MEMBERS

TASKS	PERCENT MEMBERS PERFORMING (N=11)
PERFORM GENERAL HOUSEKEEPING PROCEDURES	100
PERFORM TRANSMITTER RUNUP PROCEDURES	91
INSTALL OR REMOVE GROUND ANCHORS, TIEDOWNS, OR STRAPS	91
PERFORM SOLDERING ON CIRCUIT BOARDS	91
ERECT MOBILE RADAR ANTENNAS	82
CLEAN OR REPLACE AIR OR MOISTURE FILTERS	82
PERFORM PMIs ON TRANSMITTER EQUIPMENT	82
LEVEL SHELTERS OR VANS	82
PERFORM PMIs ON DISPLAY EQUIPMENT	73
INSTALL OR REMOVE INTERCONNECTING CABLES	73
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	73
PERFORM PMIs ON RECEIVER EQUIPMENT	73
PERFORM PMIs ON ANTENNA EQUIPMENT	73
PERFORM PMIs ON IFF/SIF EQUIPMENT	73
INSTALL OR DISASSEMBLE MOBILE IFF/SIF ANTENNAS	64
PERFORM OPERATIONAL CHECKS OF TRANSMITTERS	64
PITCH OR STRIKE TENTS	64
INSTALL OR REMOVE MOBILIZERS OR TRANSPORTERS	64
INSTALL OR DISASSEMBLE WAVEGUIDE SYSTEMS	55
LOAD OR OFFLOAD EQUIPMENT ON TRUCKS OR AIRCRAFT	55
INVENTORY SUPPLIES, EQUIPMENT, OR TOOLS	55
PREPARE SUPPLY ISSUE/TURN-IN REQUESTS FORMS (AF FORM 2005)	55
PERFORM OPERATIONAL CHECKS OF IFF/SIF RADAR SYSTEMS	55
PERFORM CORROSION CONTROL ON EQUIPMENT VANS OR TRAILERS	55
PERFORM SYSTEM RUN DOWN PROCEDURES	45
INSTALL OR REMOVE EXTERNAL POWER LINES	45
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	45
PERFORM INDICATOR SWEEP CHECKS	45
PERFORM PMIs ON MOBILIZERS OR TRANSPORTERS	45
CONSTRUCT TEST CABLES OR TEST PLUGS	45

TABLE VIII

REPRESENTATIVE TASKS PERFORMED ELECTRICAL INSTALLATION TEAM MEMBERS

TASKS	PERCENT MEMBERS PERFORMING (N=13)
INSTALL OR REMOVE INTERCONNECTING CABLES	100
DRILL AND TAP HOLES FOR MOUNTING EQUIPMENT	100
INSTALL OR REMOVE RADAR SYSTEM WIRING OR CABLES	92
INVENTORY SCHEME MATERIALS	92
INSTALL OR DISASSEMBLE PLAN POSITION INDICATOR SYSTEMS	92
INSTALL OR DISASSEMBLE PRECISION APPROACH RADAR SYSTEMS	92
INSTALL OR DISASSEMBLE FIXED RADAR ANTENNA SYSTEMS	92
INSPECT SCHEME MATERIALS	92
INSTALL OR REMOVE CABLE JUNCTION BOXES	92
CONDUCT OPERATIONAL TESTS OF NEWLY INSTALLED EQUIPMENT	92
INSTALL OR REMOVE EQUIPMENT CABINETS	85
INSTALL OR REMOVE RADAR REFLECTORS	85
INSTALL OR DISASSEMBLE WAVEGUIDE SYSTEMS	85
INSTALL OR DISASSEMBLE PRECISION ELEVATION OR AZIMUTH ANTENNA ASSEMBLIES	85
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	85
INSTALL OR DISASSEMBLE FIXED IFF/SIF RADAR SYSTEMS	85
INSTALL OR REMOVE CONDUIT OR WIREWAYS	85
REVIEW SCHEME PACKAGES	85
CONDUCT SHAKEDOWN TESTS	85
INSTALL OR DISASSEMBLE FIXED SURVEILLANCE RADAR SYSTEMS	85
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	77
INSTALL OR REMOVE OBSTRUCTION LIGHTS	77
INSTALL OR DISASSEMBLE BRITE RADAR INDICATING TOWER EQUIPMENT SYSTEMS	77
FABRICATE CABLE HARNESSES	69
FABRICATE CONDUITS	69
INSTALL OR REMOVE SHELTER OR VAN ACCESSORIES, SUCH AS WALKWAYS, LADDERS, OR STEPS	69
LACE WIRING ASSEMBLIES	69
LEVEL SHELTERS OR VANS	69
DRAW EQUIPMENT FOR INSTALLATION PROJECTS	69
PACK OR UNPACK SUPPORT EQUIPMENT FOR SHIPMENT	69
ORIENT NEWLY ASSIGNED PERSONNEL	69

TABLE IX

REPRESENTATIVE TASKS PERFORMED BY OPERATIONS CREW MEMBERS

TASKS	PERCENT MEMBERS PERFORMING (N=29)
RECORD BOMB AWAY TIMES	97
OPERATE PLOTTING BOARDS	97
MEASURE CIRCULAR ERRORS OR AZIMUTHS	90
MEASURE GROUND SPEED	90
MEASURE AIRCRAFT TRACKS	90
PERFORM OPERATIONAL CHECKS OF PLOTTING BOARDS	86
COMPUTE RBS MISSION SCORES	83
PERFORM PLOTTING BOARD SET UP PROCEDURES FOR RBS MISSIONS	83
MEASURE AUTORANGE OR AUTOANGLES	83
PERFORM RBS MISSION RUN SCORINGS	79
RECORD POSTRELEASE INFORMATION	79
ANNOTATE PLOTTING PAPER WITH RADAR BOMB SCORING (RBS) MISSION DATA	76
ENCODE RBS SCORES	76
PERFORM SYSTEM RUN DOWN PROCEDURES	76
PERFORM PLOTTING BOARD SET UP PROCEDURES FOR ECM MISSIONS	76
REPLOT RBS DATA	72
PERFORM AIRCRAFT AUTOMATIC TRACKING PROCEDURES	72
CONFIRM RBS SCORES	69
CONFIRM POSTRELEASE INFORMATION	69
ADVISE RADAR OPERATORS OR AIRCREWS OR RUN TERMINATIONS	69
COMPUTE BALLISTICS INFORMATION	66
CONFIRM ECM SCORES	66
IDENTIFY TRACKED AIRCRAFT	66
LOG RADAR CALIBRATION CHECKS	66
COMPUTE ECM MISSION SCORES	62
RELAY CONFIRMED RBS PREMISSION RUN INFORMATION, SUCH AS TARGETS, IP, OR RUN TYPES	62
OPERATE MANUAL TRACKER RANGE CONTROLS	62
PERFORM ECM MISSION RUN SCORINGS	59
VERIFY AIRCRAFT POSITIVE IDENTIFICATION WITH OTHER RADARS	59
ANNOTATE PLOTTING PAPER WITH ELECTRONIC COUNTERMEASURE (ECM) MISSION DATA	59
PERFORM AIRCRAFT ACQUISITION PROCEDURES	59
PERFORM I BAND RADAR SEARCH OR LOCK-ON PROCEDURES	59

TABLE X

REPRESENTATIVE TASKS PERFORMED BY OPERATIONS MAINT. PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=28)
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	89
REMOVE OR REPLACE RESISTORS	89
RECORD BOMB AWAY TIMES	86
PERFORM PMIs ON COMPUTER EQUIPMENT	86
CONFIRM RBS SCORES	82
PERFORM PLOTTING BOARD SET UP PROCEDURES FOR RBS MISSIONS	82
PERFORM OPERATIONAL CHECKS OF PLOTTING BOARDS	79
MEASURE GROUND SPEED	79
PERFORM PMIs ON RECEIVER EQUIPMENT	79
REMOVE OR REPLACE CAPACITORS	79
PERFORM AREA BEAUTIFICATION	75
REMOVE OR REPLACE ELECTRONIC TUBES	75
PERFORM TRANSMITTER RUNUP PROCEDURES	75
PERFORM POWER SUPPLY OPERATIONAL CHECKS	75
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	75
RECORD POSTRELEASE INFORMATION	71
MEASURE AIRCRAFT TRACKS	71
PERFORM PMIs ON TRANSMITTER EQUIPMENT	71
OPERATE PLOTTING BOARDS	71
PERFORM SYSTEM RUN DOWN PROCEDURES	71
COMPUTE RBS MISSION SCORES	71
PERFORM PREOPERATIONAL AZIMUTH AND ELEVATION ANTENNA BALANCE CHECKS	71
PERFORM RBS MISSION RUN SCORINGS	68
PERFORM PMIs ON RANGE AND ANGLE TRACK EQUIPMENT	68
ADJUST POWER SUPPLIES OTHER THAN TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	68
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	68
REMOVE OR REPLACE SWITCHES	68
REMOVE OR REPLACE RELAYS	68
MEASURE CIRCULAR ERRORS OR AZIMUTHS	64
CONFIRM ECM SCORES	64
PERFORM PMIs ON ANTENNA EQUIPMENT	64

TABLE XI

REPRESENTATIVE TASKS PERFORMED BY ATR OPERATORS

TASKS	PERCENT MEMBERS PERFORMING (N=11)
OPERATE MANUAL TRACKER AZIMUTH OR ELEVATION CONTROLS	100
OPERATE MANUAL TRACKER RANGE CONTROLS	91
PERFORM GENERAL HOUSEKEEPING PROCEDURES	73
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	73
PERFORM PMIs ON ANTENNA EQUIPMENT	73
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	73
PERFORM PMIs ON VANS OR TRAILERS	64
CLEAN OR REPLACE AIR OR MOISTURE FILTERS	64
ALIGN B SCAN INDICATORS	64
PERFORM AREA BEAUTIFICATION	55
PERFORM TRANSMITTER RUNUP PROCEDURES	55
PERFORM SOLDERING ON CIRCUIT BOARDS	55
REMOVE OR REPLACE RESISTORS	55
ADJUST POWER SUPPLIES OTHER THAN TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	55
PERFORM POWER SUPPLY OPERATIONAL CHECKS	55
LOAD COMPUTER PROGRAMS	55
PERFORM AIRCRAFT AUTOMATIC TRACKING PROCEDURES	45
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	45
ALIGN POWER SUPPLIES OTHER THAN TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	45
PERFORM SYSTEM RUN DOWN PROCEDURES	36
PERFORM OPERATOR MAINTENANCE ON VEHICLES	36
PERFORM I BAND RADAR SEARCH OR LOCK-ON PROCEDURES	36
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	36
CONVERT GRID SYSTEM DATA TO AZIMUTH AND RANGE DATA	36
MAINTAIN SUPPORT EQUIPMENT, SUCH AS MOTOR GENERATORS, GROUND HEATERS, OR AIR COMPRESSORS	27
REMOVE OR REPLACE SEMICONDUCTOR DEVICES	27
OPERATE RADAR TRAINING DEVICES	27
PERFORM TARGET SIMULATOR PROCEDURES FOR RADAR TRACKING OPERATOR TRAINING	27
TRANSFER TRACKING CONTROL OF AIRCRAFT TO MANUAL TRACKERS	27

TABLE XII

REPRESENTATIVE TASKS PERFORMED BY JOB CONTROL PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=72)
PREPARE JOB/STATUS DOCUMENT FORMS (AF FORM 264)	93
MAINTAIN STATUS BOARDS, GRAPHS, OR CHARTS	78
ISSUE JOB CONTROL NUMBERS	74
MAINTAIN EQUIPMENT STATUS REPORTS	68
DETERMINE WORK PRIORITIES	53
DOCUMENT EQUIPMENT CANNIBALIZATION	53
PREPARE BRIEFINGS	46
PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	35
PREPARE APRs	31
PERFORM WORK AREA SECURITY INSPECTIONS	29
DISPATCH MAINTENANCE PERSONNEL	28
CONTROL REAL TIME EQUIPMENT OPERATIONS OR MAINTENANCE	25
PREPARE PUNCH CARD TRANSCRIPT FORMS (AF FORM 1530)	25
TYPE RECORDS, REPORTS, OR CORRESPONDENCE	25
CONDUCT OJT	25
COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED MATTERS	25
PREPARE JOINT MESSAGE FORMS (DD FORM 173)	24
UPDATE EQUIPMENT OPERATIONS OR MAINTENANCE SCHEDULES	24
MAINTAIN PREVENTIVE MAINTENANCE INSPECTIONS LISTINGS	22
DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	22
CONDUCT BRIEFINGS OTHER THAN CREW BRIEFINGS	22
ORIENT NEWLY ASSIGNED PERSONNEL	22
DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT	19
CONDUCT CREW SHIFT CHANGEOVER BRIEFINGS	18
MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	18
DEVELOP EQUIPMENT OPERATIONS OR MAINTENANCE SCHEDULES	18
REVIEW CORRESPONDENCE OR REPORTS	18
INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	18
DIRECT MAINTENANCE OR FACILITIES OF WORK AREAS	17
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	17

TABLE XIII

REPRESENTATIVE TASKS PERFORMED BY RADAR MAINT. SUPERVISORS

TASKS	PERCENT MEMBERS PERFORMING (N=177)
PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	96
COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED MATTERS	95
ORIENT NEWLY ASSIGNED PERSONNEL	93
PREPARE APRs	90
INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	90
DETERMINE WORK PRIORITIES	88
REVIEW CORRESPONDENCE OR REPORTS	81
INDORSE AIRMAN PERFORMANCE REPORTS (APR)	80
ASSIGN PERSONNEL TO DUTY POSITIONS	79
SCHEDULE TEMPORARY DUTY, LEAVES, OR PASSES	79
EVALUATE INDIVIDUALS FOR RECOGNITION	77
PREPARE REPLIES TO INSPECTION REPORTS	77
WRITE CORRESPONDENCE	76
PLAN WORK ASSIGNMENTS	76
ESTABLISH WORK SCHEDULES	73
DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	73
PREPARE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	71
MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	68
COUNSEL TRAINEES ON TRAINING PROGRESS	66
IMPLEMENT SELF-INSPECTION PROGRAMS	64
DERERMINE OJT TRAINING REQUIREMENTS	64
DIRECT MAINTENANCE OF FACILITIES OR WORK AREAS	62
PERFORM SELF-INSPECTIONS	60
CONDUCT BRIEFINGS OTHER THAN CREW BRIEFINGS	60
ASSIGN ON-THE-JOB TRAINING (OJT) TRAINERS	59
INITIATE PERSONNEL ACTION REQUESTS	59
DEVELOP WORK METHODS OR PROCEDURES	58
EVALUATE INSPECTION REPORTS OR PROCEDURES	58
ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS (OI), OR STANDARD OPERATING PROCEDURES (SOP)	57

TABLE XIV

REPRESENTATIVE TASKS PERFORMED BY QUALITY CONTROL PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=114)
PERFORM EQUIPMENT INSPECTIONS	94
PREPARE INSPECTION REPORTS	90
EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	89
EVALUATE INSPECTION REPORTS OR PROCEDURES	85
EVALUATE MAINTENANCE PROCEDURES	84
PERFORM PERSONNEL PROFICIENCY EVALUATIONS	82
REVIEW CORRESPONDENCE OR REPORTS	82
EVALUATE CORROSION CONTROL PROGRAMS	82
PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORK SHOPS	82
EVALUATE TECHNICAL ORDER IMPROVEMENT REPORTS	79
PREPARE ROUTING AND REVIEW OF QUALITY CONTROL REPORTS FORMS (AF FORM 2419)	75
ANALYZE TRENDS IN SYSTEM MALFUNCTIONS	75
PREPARE QUALITY CONTROL INSPECTION SUMMARY FORMS (AF FORM 2420)	74
DEVELOP INSPECTION SCHEDULES	74
PERFORM DEFICIENCY ANALYSIS	73
EVALUATE MATERIAL DEFICIENCY REPORTS	71
ESTABLISH INSPECTION PROCEDURES	70
PERFORM SELF-INSPECTIONS	69
EVALUATE PERFORMANCE OF NEWLY INSTALLED EQUIPMENT	69
EVALUATE MAINTENANCE OF PUBLICATION LIBRARIES	68
IMPLEMENT QUALITY CONTROL STANDARDS	68
WRITE CORRESPONDENCE	67
PERFORM ACTIVITY INSPECTIONS	66
PERFORM ACCEPTANCE INSPECTIONS	65
PREPARE REPLIES TO INSPECTION REPORTS	63
MAINTAIN TECHNICAL ORDER FILES	56
PREPARE TECHNICAL ORDER SYSTEM PUBLICATION IMPROVEMENT REPORT AND REPLY FORMS (AFTO FORM 22)	56
CERTIFY STATUS OF REPARABLE, SERVICEABLE, OR CONDEMNED PARTS	56
EVALUATE MAINTENANCE DATA OR EQUIPMENT RECORD FORMS	56
TYPE RECORDS, REPORTS, OR CORRESPONDENCE	52
PERFORM FACILITY INSPECTIONS	51

TABLE XV

REPRESENTATIVE TASKS PERFORMED BY NCOICs, PLANS AND SCHEDULING

TASKS	PERCENT MEMBERS PERFORMING (N=14)
PREPARE PUNCH CARD TRANSCRIPT FORMS (AF FORM 1530)	100
DEVELOP EQUIPMENT OPERATIONS FOR MAINTENANCE SCHEDULES	100
MAINTAIN PREVENTIVE MAINTENANCE INSPECTIONS LISTINGS	86
REVIEW CORRESPONDENCE OR REPORTS	86
PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	86
MAINTAIN PRECISION MEASUREMENT EQUIPMENT (PME) CALIBRATION SCHEDULES	79
WRITE CORRESPONDENCE	79
MAINTAIN TIME COMPLIANCE TECHNICAL ORDER REQUIREMENTS	79
PREPARE JOB/STATUS DOCUMENT FORMS (AF FORM 264)	71
UPDATE EQUIPMENT OPERATIONS OR MAINTENANCE SCHEDULES	64
MAINTAIN STANDARD AIR FORCE PUBLICATIONS, REGULATIONS, OR MANUALS	64
PLAN EQUIPMENT OR FACILITY MAINTENANCE REQUIREMENTS	57
MAINTAIN ADMINISTRATIVE OR RECORDS FILES	57
MAINTAIN STATUS BOARDS, GRAPHS, OR CHARTS	57
PREPARE JOINT MESSAGE FORMS (DD FORM 173)	57
DRAFT LOCAL POLICY OR HIGHER HEADQUARTERS DIRECTIVES	57
PREPARE REPLIES TO INSPECTION REPORTS	57
PREPARE APRs	57
DEVELOP INSPECTION SCHEDULES	50
COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED MATTERS	50
MAINTAIN HISTORICAL RECORDS	43
MAINTAIN EQUIPMENT STATUS REPORTS	43
EVALUATE MAINTENANCE DATA COLLECTION REPORTS	43
CONDUCT OJT	43
DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	43
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	43
DETERMINE WORK PRIORITIES	43
ESTABLISH WORK SCHEDULES	43
PREPARE BRIEFINGS	43
PREPARE CUSTODIAN REQUEST/RECEIPT FORMS (AF FORM 601B)	43
INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	36
ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS (OI), OR STANDARD OPERATING PROCEDURES (SOP)	36

TABLE XVI

REPRESENTATIVE TASKS PERFORMED BY ATR WORK CENTER SUPERVISORS

TASKS	PERCENT MEMBERS PERFORMING (N=11)
SUPERVISE APPRENTICE AUTOMATIC TRACKING RADAR SPECIALISTS (AFSC 30333)	100
SUPERVISE AUTOMATIC TRACKING RADAR SPECIALISTS (AFSC 30353)	100
PREPARE APRs	91
DETERMINE WORK PRIORITIES	91
PERFORM PMIs ON ANTENNA EQUIPMENT	91
REMOVE OR REPLACE RESISTORS	91
REMOVE OR REPLACE FUSES OR FUSE HOLDERS	91
CONDUCT OJT	82
PERFORM SOLDERING ON CIRCUIT BOARDS	82
PLAN WORK ASSIGNMENTS	82
ASSIGN ON-THE-JOB TRAINING (OJT) TRAINERS	82
COUNSEL TRAINEES ON TRAINING PROGRESS	82
INVENTORY SUPPLIES, EQUIPMENT, OR TOOLS	82
VERIFY PRIORITY MONITOR REPORTS (D-18)	82
ADJUST POWER SUPPLIES OTHER THAN TRANSMITTER HIGH VOLTAGE POWER SUPPLIES	82
REMOVE OR REPLACE RELAYS	82
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	73
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	73
PERFORM AREA BEAUTIFICATION	73
PREPARE SUPPLY ISSUE/TURN-IN REQUESTS FORMS (AF FORM 2005)	73
PERFORM WORK AREA SECURITY INSPECTIONS	73
EVALUATE INDIVIDUALS FOR RECOGNITION	73
PERFORM SOLDERING ON WIRING TERMINALS OR CONNECTOR PLUGS	73
PREPARE REPARABLE ITEM PROCESSING TAG FORMS (AFTO FORM 350)	73
REMOVE OR REPLACE SEMICONDUCTOR DEVICES	73
PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	64
MAINTAIN DAILY DOCUMENT REGISTER AND ITEM SURVEILLANCE LISTS (D04)	64
EVALUATE OJT TRAINERS OR TRAINEES	64
PERFORM GENERAL HOUSEKEEPING PROCEDURES	64
PERFORM OPERATOR MAINTENANCE ON VEHICLES	64
PERFORM SYSTEM RUN DOWN PROCEDURES	64

TABLE XVII

REPRESENTATIVE TASKS PERFORMED BY TACTICAL RADAR MAINT. NCOICs

TASKS	PERCENT MEMBERS PERFORMING (N=20)
PREPARE SERVICEABLE TAG - MATERIEL FORMS (DD FORM 1574)	100
ERECT MOBILE RADAR ANTENNAS	95
PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	95
PREPARE SUPPLY ISSUE/TURN-IN REQUESTS FORMS (AF FORM 2005)	90
INSTALL OR REMOVE GROUND ANCHORS, TIEDOWNS, OR STRAPS	90
LEVEL SHELTERS OR VANS	90
DRIVE HEAVY-DUTY VEHICLES, SUCH AS 1-1/2 TON TRUCKS OR 10 TON TRACTOR-TRAILER COMBINATIONS	85
PREPARE APRs	85
PREPARE REPARABLE ITEM PROCESSING TAG FORMS (AFTO FORM 350)	85
DETERMINE WORK PRIORITIES	85
PREPARE MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	85
INSTALL OR REMOVE INTERCONNECTING CABLES	80
LOAD OR OFFLOAD EQUIPMENT ON TRUCKS OR AIRCRAFT	80
WRITE CORRESPONDENCE	80
SUPERVISE AIRCRAFT CONTROL AND WARNING (AC AND W) RADAR SPECIALISTS (*AFSC 30352*)	75
INSTALL OR DISASSEMBLE MOBILE IFF/SIF ANTENNAS	75
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	75
CONDUCT OJT	75
PITCH OR STRIKE TENTS	75
PREPARE RADAR VANS FOR SHIPMENT	75
CERTIFY STATUS OF REPARABLE, SERVICEABLE, OR CONDEMNED PARTS	75
PREPARE UNSERVICEABLE (REPARABLE) TAG MATERIEL FORMS (DD FORM 1577-2)	75
COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED MATTERS	75
INSTALL OR REMOVE MOBILIZERS OR TRANSPORTERS	70
PERFORM GENERAL HOUSEKEEPING PROCEDURES	70
MAINTAIN DAILY DOCUMENT REGISTER AND ITEM SURVEILLANCE LISTS (D04)	70
ORIENT NEWLY ASSIGNED PERSONNEL	70
ESTABLISH WORK SCHEDULES	70
PERFORM PMIs ON IFF/SIF EQUIPMENT	70
PERFORM PMIs ON ANTENNA EQUIPMENT	70

TABLE XVIII

REPRESENTATIVE TASKS PERFORMED BY RESIDENT COURSE INSTRUCTORS

TASKS	PERCENT MEMBERS PERFORMING (N=52)
PREPARE LESSON PLANS	100
SCORE TESTS	100
ADMINISTER TESTS	92
CONDUCT RESIDENT COURSE CLASSROOM TRAINING	90
COUNSEL TRAINEES ON TRAINING PROGRESS	79
WRITE TEST QUESTIONS	75
DEVELOP TRAINING AIDS	75
EVALUATE PROGRESS OF RESIDENT COURSE STUDENTS	71
CONDUCT SAFETY TRAINING	52
MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	52
COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED MATTERS	42
PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	37
EVALUATE TRAINING METHODS OR TECHNIQUES	29
DETERMINE RESIDENT COURSE TRAINING REQUIREMENTS	29
PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	27
PREPARE TECHNICAL ORDER SYSTEM PUBLICATION IMPROVEMENT REPORT AND REPLY FORMS (AFTO FORM 22)	25
MAINTAIN STUDY REFERENCE FILES	21
MAINTAIN TECHNICAL ORDER FILES	19
PREPARE TRAINING REPORTS	19
INVENTORY SUPPLIES, EQUIPMENT, OR TOOLS	19
DEVELOP TRAINING COURSE OR CAREER DEVELOPMENT COURSE (CDC) CURRICULUM MATERIALS	17
CONDUCT SECURITY TRAINING	17
SELECT INDIVIDUALS FOR SPECIALIZED TRAINING	15
CONDUCT OJT	13
MAINTAIN ADMINISTRATIVE OR RECORDS FILES	13
EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	12
EVALUATE INDIVIDUALS FOR RECOGNITION	12
EVALUATE INSTRUCTOR PERFORMANCE	12
EVALUATE OJT TRAINERS OR TRAINEES	12
INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	12

TABLE XIX

REPRESENTATIVE TASKS PERFORMED BY OPERATIONS ANALYSTS

TASKS	PERCENT MEMBERS PERFORMING (N=10)
MEASURE GROUND SPEED	100
MEASURE AIRCRAFT TRACKS	100
MEASURE AUTORANGE OR AUTOANGLES	100
MEASURE CIRCULAR ERRORS OR AZIMUTHS	90
ENCODE RBS SCORES	90
COMPUTE RBS MISSION SCORES	90
CONFIRM RBS SCORES	80
REPLOT RBS DATA	60
COMPUTE BALLISTICS INFORMATION	60
PERFORM RBS MISSION RUN SCORINGS	50
COMPILE MISSION RESULTS	40
RECORD POSTRELEASE INFORMATION	30
REPLOT ECM DATA	30
CONFIRM ECM SCORES	30
LOAD COMPUTER PROGRAMS	30
MEASURE EARTH CURVATURE CORRECTION	30
SCORE TESTS	30
CONFIRM POSTRELEASE INFORMATION	20
INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	20
DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	20
ORIENT NEWLY ASSIGNED PERSONNEL	20
COMPUTE ECM MISSION SCORES	20
CONDUCT STAFF ASSISTANCE VISITS	20
WRITE TEST QUESTIONS	20
ADVISE COMMUNICATORS OF RESTRICTED BANDS	20
MAINTAIN CLASSIFIED DOCUMENTS	10
SCHEDULE TEMPORARY DUTY, LEAVES, OR PASSES	10
RECORD BOMB AWAY TIMES	10